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## Study of Georgian Cladoniaceae

Ana Rosa Burgaz<sup>1</sup>, Teuvo Ahti<sup>2</sup>, Tsimi Inashvili<sup>3</sup>, Ketevan Batsatsashvili<sup>4</sup> & Inga Kupradze<sup>3</sup>

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**Abstract.** Through updating of the identifications of 1306 specimens housed at the largest herbarium collection in Tbilisi (TBI) and some new collections made in the summer of 2015 along the Greater Caucasus Range in Georgia, a comprehensive list and a key of forty three Georgian *Cladonia* species are presented. *Cladonia acuminata*, *C. bacilliformis*, *C. borealis*, *C. conista*, *C. cyanipes*, *C. cyathomorpha*, *C. cf. libifera*, *C. macrophyllodes*, *C. sulphurina*, and *C. symphycarpa* are reported as new to Georgia. Thirteen species of *Cladonia* were deleted from the earlier checklists.

**Key words:** *Cladonia*; Georgia; lichens; phytogeography.

## [es] Estudio de las Cladoniaceae de Georgia

**Resumen.** Como consecuencia de la revisión, reidentificación y actualización de los 1306 ejemplares depositados en el herbario de Tbilisi (TBI), y las nuevas recolecciones efectuadas en el verano de 2015 en las montañas del Gran Causaso de Georgia, se presenta una relación de cuarenta y tres especies del género *Cladonia* así como una clave de identificación. *Cladonia acuminata*, *C. bacilliformis*, *C. borealis*, *C. conista*, *C. cyanipes*, *C. cyathomorpha*, *C. cf. libifera*, *C. macrophyllodes*, *C. sulphurina*, y *C. symphycarpa* son nuevas citas para Georgia. Trece especies citadas con anterioridad no han podido ser confirmadas.

**Palabras clave:** *Cladonia*; Georgia; líquenes; fitogeografía.

## Introduction

Georgia is a rather contrasted country located at the intersection of Eastern Europe and Western Asia, and is included in the Colchic ecoregion. The Colchic lowlands located in the west and central part are surrounded in the north by the Greater Caucasus Range with peaks over 5000 m above sea level, in the south by the Lesser Caucasus Range with lower altitudes (over 3000 m) and volcanic origin, and in the east by the Imeretian Elevation, which connects both Ranges. Georgia represents the Caucasian and the Euxine Provinces of the Eurosiberian Region and it is an important biological crossroads region in the temperate zone of the Northern Hemisphere, showing great geological and climatic contrasts. The average annual tempera-

ture decreases as elevation rises from 15 °C to -6 °C at 3700 m. The annual precipitation ranges from 400 to 4500 mm, decreasing from W to E and from N to S (Nakhutsrishvili 2013).

From sea level to the mountainous zones of north and western Georgia there is a mixture of deciduous forest (*Fagus orientalis*, *Quercus* spp., *Carpinus* spp., etc.) together with coniferous formations (*Pinus* spp., *Abies nordmanniana* or *Picea orientalis*). Several endemic plants are found, believed to represent relics of the Arcto-Tertiary period. In eastern and southern Georgia, arid (*Salsola* spp., *Suaeda* spp., *Juniperus* spp. etc.) and semi-arid vegetation (with several grassland species) are very common. In the alpine and subalpine zones, lichens and mosses, Caucasian alpine grassland and Caucasian krummholz cover the upper parts of the high moun-

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tains. Nevertheless, there are several vascular plant formations and the vertical distribution of the vegetation belts varies with the altitude and exposure (Nakhutsrishvili 2013).

The knowledge on the diversity of the lichen families in Georgia was compiled from the dispersed records in floristic studies by Inashvili (1986) and Inashvili & Batsatsashvili (2010). The earlier catalogue of Caucasian lichens by Barkhalov (1983) also includes numerous Georgian records. However, there is no recent conspectus, such as one on the lichens of the neighbouring country Azerbaijan (Alverdieva & Novruzov 2014). A florogenetic analysis of the lichens of the Greater Caucasus by Novruzov (1990) also pertain Georgian flora. There are numerous recent papers on lichens of the Russian Caucasus, for instance one on Erzi Reserve in Ingushetia by the Georgian boundary (Urbanavichus & Urbanavichene 2017).

The aim of this contribution is to summarize results from new collections and the Tbilisi

herbarium collections of *Cladonia* from Georgia.

## Material and Methods

Specimens studied can be found in Annexe 1. Many of the specimens turned out to represent new records to Georgia or remarkable extensions of the Range in Caucasia.

The new collections were deposited in Madrid (MACB) or Helsinki (H). Several specimens were analysed by means of thin-layer chromatography (TLC) to identify the major lichen substances (see Orange et al. 2001). The main secondary metabolites of Georgian *Cladonia* are listed in Table 1. Comments on world distribution of species are from Ahti & Stenroos (2013) or the database maintained by T. Ahti. Distribution maps are presented according to the administrative divisions of Georgia (Fig. 1).

Table 1. Main secondary metabolites of Georgian *Cladonia* and chemical reactions to detect them.

ATR: atranorin, BAR: barbatic acid, BOU: bourgeanic acid, FUM: fumarprotocetraric acid, HSEK: homosekikaic acid, NST: norstictic acid, PER: perlatolic acid, PSO: psoromic acid, RAN: rangiformic acid, SQU: squamatic acid, THAM: thamnolic acid, USN: usnic acid, ZEO: zeorin.

Species	Secondary metabolites													Spot tests			
	ATR	BAR	BOU	FUM	HSEK	NST	PER	PSO	RAN	SQU	THAM	USN	ZEO	P	K	KC	UV
<i>C. acuminata</i>	+					+								+	+		
<i>C. amaurocraea</i>		+										+				+	
<i>C. arbuscula</i>				+								+		+		+	
<i>C. bacilliformis</i>		+										+					
<i>C. borealis</i>		+										+				+	
<i>C. botrytes</i>		+										+				+	
<i>C. caespiticia</i>				+										+			
<i>C. cariosa</i>	+								+						+		
<i>C. carneola</i>												+	+			+	
<i>C. cenotea</i>		+															+
<i>C. chlorophaea</i>				+													
<i>C. coccifera</i>												+	+			+	
<i>C. coniocraea</i>				+										+			
<i>C. conista</i>			+	+										+			
<i>C. cornuta</i>				+										+			
<i>C. cyanipes</i>		+										+					+
<i>C. cyathomorpha</i>				+										+			
<i>C. decorticata</i>							+										+
<i>C. deformis</i>												+	+				
<i>C. digitata</i>											+			+	+		
<i>C. fimbriata</i>				+										+			
<i>C. floerkeana</i>		+															
<i>C. foliacea</i>				+								+		+		+	

Species	Secondary metabolites													Spot tests			
	ATR	BAR	BOU	FUM	HSEK	NST	PER	PSO	RAN	SQU	THAM	USN	ZEO	P	K	KC	UV
<i>C. furcata</i> 1				+										+			
<i>C. furcata</i> 2	+		+	+										+	+		
<i>C. furcata</i> 3	+		+												+		
<i>C. gracilis</i> subsp. <i>elongata</i>				+										+			
<i>C. cf. libifera</i>				+										+			
<i>C. macilenta</i> 1											+			+	+		
<i>C. macilenta</i> 2 ( <i>C. bacillaris</i> )		+															
<i>C. macroceras</i>				+										+			
<i>C. macrophyllodes</i>	+			+										+	+		
<i>C. mitis</i>									+			+				+	
<i>C. phyllophora</i>				+										+			
<i>C. pleurota</i>												+	+			+	
<i>C. pocillum</i>				+										+			
<i>C. pyxidata</i>				+										+			
<i>C. rangiferina</i>	+			+										+	+		
<i>C. rangiformis</i> 1	+								+						+		
<i>C. rangiformis</i> 2	+			+					+					+	+		
<i>C. rei</i>				+	+									+			
<i>C. stellaris</i>							+					+					+
<i>C. squamosa</i>										+							+
<i>C. subulata</i>				+										+			
<i>C. sulphurina</i>										+		+				+	+
<i>C. symphycarpa</i> 1	+					+											
<i>C. symphycarpa</i> 2	+							+									
<i>C. uncialis</i>												+				+	



Figure 1. Administrative divisions of Georgia: 1- Abkhazia, 2- Samegrelo-Zemo Svaneti, 3- Racha-Lechjumi - Kvemo Svaneti, 4- Shida Kartli, 5- Mtskheta-Mtianeti, 6- Kakheti, 7- Imereti, 8- Guria, 9 Adjara, 10- Samskhe-Javakheti, 11- Kvemo Kartli, 12- Tbilisi.

## Results and Discussion

The Cladoniaceae are represented exclusively by the genus *Cladonia*. Of the 43 analysed species the following are new records to the former lichen checklist of Georgia (\*): *Cladonia acuminata*, *C. bacilliformis*, *C. borealis*, *C. conista*, *C. cyanipes*, *C. cyathomorpha*, *C. cf. libifera*, *C. macrophyllodes*, *C. stellaris*, *C. sulphurina*, and *C. symphylicarpa*.

The commonest species are: *C. cenotea*, *C. chlorophaea*, *C. coniocraea*, *C. fimbriata*, *C. furcata*, *C. pocillum*, *C. pyxidata*, *C. rangiferina*, *C. rangiformis* and *C. rei*.

Most of the *Cladonia* species occur between 1000-2000 m of altitude (Fig. 2) in the Greater Caucasus Range, while the Lesser Caucasus Range shows an important impoverishment. Approximately one third of species are distributed in the West Caucasian Subprovince, while a second third are restricted to the East Caucasian Subprovince; the rest being indifferent as to the phytogeographic position. Montane species are: *C. acuminata*, *C. arbuscula*, *C. borealis*, *C. botrytes*, *C. caespiticia*, *C. carneola*, *C. conista*, *C. coccifera*, *C. cornuta*, *C. cyanipes*, *C. floerkeana*, *C. gracilis* subsp. *elongata*, *C. macroceras*, *C. mitis*, *C. phyllophora*, *C. pleurota*, *C. sulphurina* and *C. uncialis*.

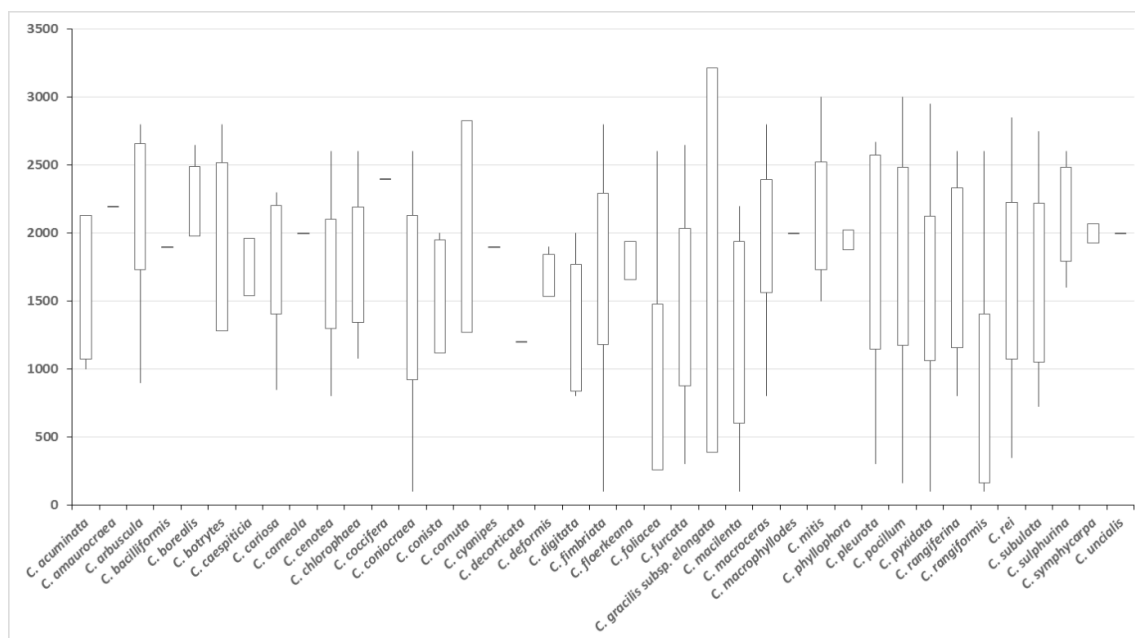


Figure 2. Species altitudinal rank in Georgia.

Western species are: *C. cyathomorpha*, *C. digitata*, *C. macilenta* and *C. squamosa*. Eastern species are: *C. amaurocraea*, *C. decorticata*, *C. deformis*, *C. cf. libifera* and *C. macrophyllodes*. Indifferent species to geographic situation are: *C. cariosa*, *C. foliacea*, *C. subulata* and *C. symphylicarpa* (Fig. 3).

In addition to the synonyms indicated under each species the following species are to be deleted from the Georgian lichen flora: *Cladonia capitata* (Michx.) Spreng. (now *C. peziziformis* (With.) J.R.Laundon), *C. glauca* Flörke, *C. magyarica* Vain., *C. spumosa* (Flörke) Schade (in Barkhalov 1983; now *C. portentosa* (Dufour) Coëm.), *C. tenuis* Harm.

(now *C. ciliata* Stirt.), *C. pityrea* (Flörke) Fr. (now *C. ramulosa* (With.) J.R.Laundon).

## List of species

\*1. *Cladonia acuminata* (Ach.) Norrl. in Norrlin & Nylander, *Herb. Lich. Fenn.*, Index 3 (57a) (1875)

This is a terricolous species not very often encountered in the country but growing from 100-2679 m altitude. The analysed samples contain atranorin, norstictic and connorstictic acids. It is mainly an arctic to temperate and boreal montane element with some outcrops in

South America (Ahti & Stenroos 2013). It was collected in Adjara, Mtskheta-Mtianeti and Samegrelo-Zemo Svaneti.

2. *Cladonia amaurocraea* (Flörke) Schaer., Lich. Helv. Spicil 1(1): 34 (1823)

A terricolous species very rare in the country growing intermixed with specimens of *C. cornuta* at 2200 m altitude. It has a circumpolar distribution in arctic and boreal zones (Ahti & Stenroos 2013). It is only known from the timberline in Mtskheta-Mtianeti.

3. *Cladonia arbuscula* (Wallr.) Flot. in Wendt, Die Thermen zu Warmbrunn: 94 (1839)

This is a terricolous species that has a temperate to arctic and antarctic distribution (Ahti & Stenroos 2013). It is common but rarely abundant and with wide altitudinal amplitude (900-2750 m). The specimen analysed contains fumarprotocetraric and usnic acids. It was collected in Adjara, Guria, Kakheti, Mtskheta-Mtianeti, Racha-Lechkhumi y Kvemo Svaneti, Samegrelo-Zemo Svaneti, Samtskhe-Javakheti, Abkhazia and Shida Kartli.

\*4. *Cladonia bacilliformis* (Nyl.) Sarnth., Österr. Bot. Z. 46: 264 (1896)

This is a very rare species growing on mosses and humose substrate (elsewhere usually on rotten conifers). It has a circumpolar distribution with continental tendencies and some outposts in southern South America (Stenroos & Ahti 1990, Ahti & Stenroos 2013). A very rare species only collected in Samtskhe-Javakheti.

\*5. *Cladonia borealis* S. Stenroos, Ann. Bot. Fenn. 26: 160 (1989)

It grows on soil above 2000 m altitude and is distributed in arctic/antarctic-temperate and circumboreal regions (Ahti & Stenroos 2013). The specimen analysed contains barbatic and usnic acids. It was earlier included in *C. coccifera*, but it differs by having flattened plates on the surface. It is known from Mtskheta-Mtianeti, Racha-Lechkhumi - Kvemo Svaneti, Samegrelo-Zemo Svaneti, Samtskhe-Javakheti and Shida Kartli.

6. *Cladonia botrytes* (K.G. Hagen) Willd., Fl. Berol. Prodr.: 365 (1787)

This species grows on rotten wood from 1500 to 2800 m. This is a very rare species with a circumpolar boreal and northern temperate distribution (Ahti & Stenroos 2013). It

is only known from Racha-Lechkhumi - Kvemo Svaneti, Samegrelo-Zemo Svaneti and Samtskhe-Javakheti.

7. *Cladonia caespiticia* (Pers.) Flörke, Clad. Comm.: 8 (1828)

This is a mainly terricolous species growing on earth banks in moist forests at 0-1600 m. It is mainly a temperate species with oceanic tendencies, not continuously circumpolar (Ahti & Stenroos 2013). It is only known from Adjara, Mtskheta-Mtianeti and Samtskhe-Javakheti where recently reported by Inashvili and Batsatsashvili (2010).

8. *Cladonia cariosa* (Ach.) Spreng., Syst. Veg., Edn 16, 4(1): 272 (1827)

It is a terricolous species growing on bare soils close to river banks. One specimen analysed contained atranorin and rangiformic acid. It is a Holarctic species with an outlier in southern South America (Ahti & Stenroos 2013). It was found in Guria, Kvemo Kartli, Mtskheta-Mtianeti, Racha-Lechkhumi - Kvemo Svaneti, Samegrelo-Zemo Svaneti, Samtskhe-Javakheti and Shida Kartli.

9. *Cladonia carneola* (Fr.) Fr., Lich. Eur. Reform. (Lund): 233 (1831)

This species grows on rotting wood and humose soil. It has a Holarctic distribution with small outlier in South America (Ahti & Stenroos 2013). It is only known from Samegrelo-Zemo Svaneti.

10. *Cladonia cenotea* (Ach.) Schaer., Lich. Helv. Spicil. 1(1): 35 (1823)

It grows on decaying wood and is mainly a Holarctic species with some outposts in Argentina and Chile (Ahti & Stenroos 2013). It is widely distributed in Adjara, Guria, Imereti, Kakheti, Mtskheta-Mtianeti, Racha-Lechkhumi - Kvemo Svaneti, Samegrelo-Zemo Svaneti, Samtskhe-Javakheti and Shida Kartli.

11. *Cladonia chlorophaea* (Flörke ex Sommerf.) Spreng., Syst. Veg., Edn 16, 4(1): 273 (1827)

This species grows on rotting wood, tree bases and humose soil. The specimens analysed contain fumarprotocetraric acid. It is a cosmopolite species (Ahti & Stenroos 2013) widely distributed in Kakheti, Kvemo Kartli, Mtskheta-Mtianeti, Racha-Lechkhumi - Kvemo Svaneti, Samegrelo-Zemo Svaneti, Samt-



skhe-Javakheti, Abkhazia and Mtskheta-Mtianeti.

12. *Cladonia coccifera* (L.) Willd., Fl. Berol. Prodr.: 361 (1787)

It grows on rock outcrops and soil and is a subcosmopolitan species (Ahti & Stenroos 2013). It is a very rare species only collected at 2400 m in Mtskheta-Mtianeti and Racha-Lechkhumi - Kvemo Svaneti. Most of the earlier records referred to *C. borealis*.

13. *Cladonia coniocraea* (Flörke) Spreng., Syst. Veg., Edn 16, 4(1): 272 (1827)  
syn. *C. ochrochlora* Flörke

This species grows on rotting wood and tree bases, very rarely on soil. It is widely distributed in both hemispheres (Ahti & Stenroos, 2013). Most of the Georgian specimens belong to *C. coniocraea* s.str., while only few represent the more oceanic morphotype often recognized as *C. ochrochlora*, which is not distinguishable in DNA analyses (Pino-Bodas et al. 2011). The species is distributed in Adjara, Guria, Imereti, Kakheti, Kvemo Kartli, Mtskheta-Mtianeti, Racha-Lechkhumi - Kvemo Svaneti, Samegrelo-Zemo Svaneti, Samtskhe-Javakheti, Abkhazia, Mtskheta-Mtianeti and Shida Kartli.

\*14. *Cladonia conista* (Ach.) Robbins, in Allen, Rhodora 32: 92 (1930)

It grows on bare soil and earth banks. This species was traditionally considered to be a chemotype of *C. humilis* (With.) J.R. Laundon but the molecular studies of Dolnik et al. (2010) and Pino-Bodas et al. (2012) showed it to be a species different from *C. humilis*. It has a subcosmopolitan, mainly temperate distribution. The specimens analysed contained bourgeanic and fumarprotocetraric acids. Herbarium specimens are identified as *C. fimbriata* but it is usually even morphologically distinguishable from that. It is known from Mtskheta-Mtianeti, Racha-Lechkhumi - Kvemo Svaneti, Shida Kartli and Abkhazia, generally below 2000 m.

15. *Cladonia cornuta* (L.) Hoffm., Descr. Adumb. Plant. Lich. 2: tab. 25 (1794)

This is a terricolous species with arctic/antarctic to northern temperate distribution (Ahti & Stenroos 2013). A very rare species in Georgia only known of Mtskheta-Mtianeti, Samegrelo-Zemo Svaneti and Shida Kartli.

\*16. *Cladonia cyanipes* (Sommerf.) Nyl., Mém. Soc. Sci. Nat. Cherbourg 5: 95 (1858) [1857]

A terricolous species that was found mixed with colonies of *C. subulata* in alpine situation. It is only known of Shida Kartli.

\*17. *Cladonia cyathomorpha* Stirt. ex Walt. Watson, J. Bot., Lond. 73: 156 (1935)

This is a terricolous species growing between rocks and soil, usually overlooked. It is distributed in Western Europe with a doubtful outpost in southern Argentina (Ahti & Stenroos, 2013). The sample contains fumarprotocetraric acid. It is only known from Samtskhe-Javakheti.

18. *Cladonia decorticata* (Flörke) Spreng., Syst. Veg., Edn 16, 4(1): 271 (1827)

This terricolous species grows in dry grasslands and was collected in Guria, Imereti, Mtskheta-Mtianeti and Samegrelo-Zemo Svaneti. It is mainly a Holarctic species with some outposts in southern South America (Ahti & Stenroos 2013).

19. *Cladonia deformis* (L.) Hoffm., Deutschl. Fl., Zweiter Theil (Erlangen): 120 (1796)

Grows on rotten wood and humose soil and has a temperate to arctic and antarctic distribution (Ahti & Stenroos 2013). It is uncommon and only known at 1550-1900 m from Mtskheta-Mtianeti, Racha-Lechkhumi - Kvemo Svaneti, Samegrelo-Zemo Svaneti and Samtskhe-Javakheti. Some early records may belong to *C. sulphurina*, which is a more common, overlooked species in Georgia.

20. *Cladonia digitata* (L.) Hoffm., Deutschl. Fl., Zweiter Theil (Erlangen): 124 (1796)

On rotten wood and tree bases in forests at 800-2000 m. It is mainly a Holarctic species with some outposts in East Africa (Ahti & Stenroos 2013). It is known of Guria, Racha-Lechkhumi - Kvemo Svaneti, Samegrelo-Zemo Svaneti and Samtskhe-Javakheti.

21. *Cladonia fimbriata* (L.) Fr., Lich. Eur. Reform. (Lund): 222 (1831)

syn. *C. major* (K. G. Hagen) Sandst., *C. minor* (K. G. Hagen) Szat.

It grows on rotten wood, tree bases and humose soil. This is a temperate to arctic species in both Hemispheres (Ahti & Stenroos 2013). The specimens analysed contain fumarprotocetraric acid.

tralic acid. A very common species distributed at about 900-2500 m in Adjara, Guria, Imereti, Kakheti, Kvemo Kartli, Mtskheta-Mtianeti, Racha-Lechkhumi - Kvemo Svaneti, Samegrelo-Zemo Svaneti, Samtskhe-Javakheti, Abkhazia and Shida Kartli.

22. *Cladonia floerkeana* (Fr.) Flörke, Clad. Comm.: 99 (1828)

This species grows on rotten wood, tree bases, humose or bare soils. It is a widespread species, also scattered in the Southern Hemisphere, mainly occurring in oceanic areas (Ahti & Stenroos 2013). This is a very rare species in Georgia, being only known from Adjara, Imereti, Racha-Lechkhumi - Kvemo Svaneti and Samegrelo-Zemo Svaneti.

23. *Cladonia foliacea* (Huds.) Willd., Fl. Berol. Prodr.: 363 (1787)

incl. *C. convoluta* (Lam.) Anders

This terricolous species grows on grasslands and open soil, preferably calcareous. It is a Western Eurasian and North African species which extends in Asia as far as Mongolia and it grows in temperate to subtropical areas (Litterski & Ahti 2004; Ahti & Stenroos 2013). It is very variable in squamule size but based on DNA studies we do not recognize *C. convoluta* as a distinct taxon (Pino-Bodas et al. 2010, 2018), although it looks very distinct in highly calcareous, arid habitats, forming large squamules, also in Georgia. There are also morphological intermediates. Frequent in Kakheti, Kvemo Kartli, Mtskheta-Mtianeti, Samtskhe-Javakheti, Tbilisi, Abkhazia and Shida Kartli.

24. *Cladonia furcata* (Huds.) Schrad., Spicil. Fl. Germ. 1: 107 (1794)

incl. *C. subrangiformis* Sandst.

A terricolous species growing on humose, shaded or open soil. It has a subcosmopolitan distribution in boreal to tropical areas (Ahti & Stenroos 2013). The Georgian specimens analysed contain fumarprotocetraric acid. It is known from Adjara, Guria, Imereti, Kakheti, Kvemo Kartli, Mtskheta-Mtianeti, Racha-Lechkhumi - Kvemo Svaneti, Samegrelo-Zemo Svaneti, Samtskhe-Javakheti, Abkhazia, Mtskheta-Mtianeti and Shida Kartli.

Morphotype '*Cladonia subrangiformis*': specimens identified as *C. subrangiformis* Sandst. are here considered to be different chemotypes of *C. furcata*, because no molec-

ular support was found for *C. subrangiformis* (Pino-Bodas et al. 2015). We detected two chemotypes: one with atranorin, rangiformic and norrangiformic acids, and the other with atranorin and additional bourgeanic, fumarprotocetraric, hypoprotocetraric and physodalic acids. Huneck et al. (2004) also found rangiformic and bourgeanic acids in specimens from Germany but they are not frequent mainly because some times the concentration of rangiformic acid is low and not easily detected by TLC. The morphotype is not common and is known from Guria, Kakheti, Samtskhe-Javakheti, Tbilisi and Shida Kartli.

25. *Cladonia gracilis* subsp. *elongata* (Wulfen) Vain., Acta Soc. Fauna Fl. Fenn. 53(1): 9 (1922)

It is a terricolous species which has mainly a Holarctic distribution, with some outposts in the South America, occurring from boreal to arctic areas (Ahti & Stenroos 2013). A very rare species only known of Mtskheta-Mtianeti. The earlier records of '*Cladonia elongata*' from Caucasia apparently all refer to the much more common *C. macroceras*. The taxonomy of the *C. gracilis* is still not fully clear (Fontaine et al. 2010, Pino-Bodas et al. 2011).

\*26. *Cladonia* cf. *libifera* Savicz, Nov. Sist. Niz. Rast. 2: 167 (1965)

This is a terricolous species of the *C. pyxidata* group with scattered distribution in arctic and boreal areas in the Northern Hemisphere (Ahti & Stenroos 2013). It was only tentatively identified because the specimen was very poor developed. It is a very rare species only known from Mtskheta-Mtianeti.

27. *Cladonia macilenta* Hoffm., Deutschl. Fl., Zweiter Theil (Erlangen): 126 (1796)

incl. *C. bacillaris* (Ach.) Genth

It grows on rotten wood and tree bases. This species has a subcosmopolitan distribution (Ahti & Stenroos 2013). Most of the samples belong to the thamnolic acid chemotype but a few specimens represent the chemotype without thamnolic acid that was earlier called *C. bacillaris*. It was collected in Adjara, Imereti, Racha-Lechkhumi - Kvemo Svaneti, Samegrelo-Zemo Svaneti, Samtskhe-Javakheti and Abkhazia.

Chemotype '*Cladonia bacillaris*': known of Adjara, Racha-Lechkhumi y Kvemo Svaneti, Samegrelo-Zemo Svaneti, Samtskhe-Javakheti and Abkhazia.



28. *Cladonia macroceras* (Delise) Hav., Bergens Mus. Årbok, Naturvidensk. Rekke, 1927(3): 12 (1928) [1927]

This is a robust, terricolous species mainly distributed in the Arctic and high mountains in the Northern Hemisphere (Ahti & Stenroos 2013). In Georgia it is mainly found above 2000 m, but the lowest elevation is 1050 m. The analysed specimens contain fumarprotocetraric acid. This species was reported from Georgia by Inashvili (1986) and for the first time for the Caucasus by Ahti (1980), but it has been generally overlooked. It has been confused with *C. gracilis*, which is very rare in Caucasia. It was collected in Adjara, Mtskheta-Mtianeti, Racha-Lechkhumi - Kvemo Svaneti, Samegrelo-Zemo Svaneti, Samtskhe-Javakheti, Shida Kartli and Abkhazia.

\*29. *Cladonia macrophyllodes* Nyl., Flora, Regensburg 58: 447 (1875)

A terricolous species distributed in the Arctic and high mountains (Ahti & Stenroos 2013). The specimen has atranorin and fumarprotocetraric acid. Probably overlooked in the Caucasus, but is known from the Russian Caucasus (Urbanavichus 2010). It is a species of late snow lies, often mainly found as large, glaucous-grey squamules. A very rare species only collected in Mtskheta-Mtianeti.

30. *Cladonia mitis* Sandst., Clad. Exs.: no. 55 (1918)

This terricolous species has a temperate to arctic/antarctic distribution (Ahti & Stenroos 2013), being very common in continental areas. The specimen analysed has rangiformic and usnic acids. Although *C. mitis* has been known from the area, most of the specimens were found under *C. arbuscula*. These two similar species may be found together, but *C. mitis* seems to be more frequent at highest elevations and on drier slopes. Several molecular studies have focused on this species complex (Myllys et al. 2003; Piercey-Normore et al. 2010; Athukorala et al. 2016), but the taxonomical level of these taxa is still under discussion. *Cladonia mitis* was collected at 1400-2800 m in Kakheti, Mtskheta-Mtianeti, Racha-Lechkhumi - Kvemo Svaneti, Samegrelo-Zemo Svaneti, Samtskhe-Javakheti, Abkhazia and Shida Kartli.

31. *Cladonia phyllophora* Hoffm., Deutschl. Fl., Zweiter Theil (Erlangen): 126 (1796) syn. *C. degenerans* (Flörke) Spreng.

A terricolous species distributed from temperate to arctic areas with some outposts in southern South America, having continental tendencies (Ahti & Stenroos 2013). It was collected in Samegrelo-Zemo Svaneti and Shida Kartli.

32. *Cladonia pleurota* (Flörke) Schaer., Enum. Critic. Lich. Europ. (Bern): 186 (1850)

This species grows on rotting wood and humose soil. It has a Holarctic distribution with outposts in southern South America and Antarctica (Ahti & Stenroos 2013). The specimens analysed contain usnic acid and zeorin. It was collected in Adjara, Mtskheta-Mtianeti, Racha-Lechkhumi - Kvemo Svaneti, Samegrelo-Zemo Svaneti and Samtskhe-Javakheti.

33. *Cladonia pocillum* (Ach.) Grognot, Pl. Crypt. Saône-et-Loire: 82 (1863)

This terricolous, calciphilous species has a subcosmopolitan distribution. The specimen analysed contains fumarprotocetraric acid. Although commonly morphologically very distinct, the taxonomic status of this species is questionable in light of recent molecular studies (Kotelko & Piercey-Normore 2010). It may have to be included in *C. pyxidata*. *Cladonia pocillum* is common in Georgia, having been collected in Kakheti, Kvemo Kartli, Mtskheta-Mtianeti, Racha-Lechkhumi - Kvemo Svaneti, Samegrelo-Zemo Svaneti, Samtskhe-Javakheti, Abkhazia and Shida Kartli.

\*34. *Cladonia pyxidata* (L.) Hoffm., Deutschl. Fl., Zweiter Theil (Erlangen): 121 (1796) incl. *C. monomorpha* Aptroot, Sipman & van Herk

A terricolous species growing on bare soil, grasslands and rarely on wood. It has a cosmopolitan distribution from temperate to arctic/antarctic areas (Ahti & Stenroos 2013). The specimens analysed contain fumarprotocetraric acid. It is very common and was collected in Adjara, Guria, Kakheti, Kvemo Kartli, Mtskheta-Mtianeti, Racha-Lechkhumi - Kvemo Svaneti, Samegrelo-Zemo Svaneti, Samtskhe-Javakheti, Tbilisi, Abkhazia and Shida Kartli.

35. *Cladonia rangiferina* (L.) F.H. Wigg, Prim. Fl. Holsat. (Kiliae): 90 (1780)

This is a terricolous species with a temperate to arctic/antarctic distribution (Ahti & Stenroos 2013). It is common and has a wide

altitudinal amplitude (1000-2600 m). It was collected in Kakheti, Kvemo Kartli, Mtskheta-Mtianeti, Racha-Lechkhumi - Kvemo Svaneti, Samegrelo-Zemo Svaneti, Samtskhe-Javakheti and Abkhazia.

36. *Cladonia rangiformis* Hoffm., *Deutschl. Fl., Zweiter Theil* (Erlangen): 114 (1796)

This terricolous species grows on grasslands and open soil, rarely on rotten wood. Its distribution is mainly restricted to western Eurasia and North Africa with one outpost in eastern Canada (Ahti & Stenroos 2013). Most of the Georgian specimens analysed contain atranorin, rangiformic and norrangiformic acids and only one contains additional fumarprotocetraric acid. It usually grows in arid lowland locations from sea-level to 350 m, but occasional specimens reach 2000 m. It was collected in Adjara, Guria, Imereti, Kakheti, Kvemo Kartli, Mtskheta-Mtianeti, Racha-Lechkhumi - Kvemo Svaneti, Samtskhe-Javakheti, Tbilisi, Abkhazia and Shida Kartli.

37. *Cladonia rei* Schaer. *Lich. Helv. Spicil.* 1(1): 34 (1823)

This is a terricolous species growing on open grasslands at 350-2000 (2500) m, more rarely on mossy rocks or rotten wood. It has a Holarctic distribution with continental preferences (Ahti & Stenroos 2013) but also reported from Australia and New Zealand (James 2009). The samples analysed contain both fumarprotocetraric and homosekikaic acids, although in most areas the chemotype lacking fumarprotocetraric acid is more common or even dominant. The taxonomic status of this species in relation to *C. subulata* was clarified by Dolnik et al. (2010) and Pino-Bodas et al. (2010b). The reports of the Himalayan species *Cladonia awasthiana* Ahti from the areas close to Georgia in Iran (Ahti & Sohrabi 2007) and Turkey seem to be erroneous and also represent *C. rei*. The Caucasian populations of *C. rei* often do appear slightly different in habit in the field, and the species can be surprisingly abundant and fertile in various habitats, such as bare rock outcrops in forests. Although *C. rei* has been reported in Georgia (Inashvili 1986), much of it has been confused with *C. subulata*, in particular. For their definite separation a TLC test to identify the diagnostic homosekikaic acid is often necessary. It is a very common species in Georgia, collected in Adjara, Imereti, Kakheti, Kvemo Kartli, Mt-

skheta-Mtianeti, Racha-Lechkhumi - Kvemo Svaneti, Shida Kartli and Abkhazia.

38. *Cladonia squamosa* (Scop.) Hoffm., *Deutschl. Fl., Zweiter Theil* (Erlangen): 125 (1796)

This species grows on humose soil. It is a subcosmopolitan species especially abundant under suboceanic to oceanic conditions (Ahti & Stenroos 2013). A very rare species only collected in Samegrelo-Zemo Svaneti province, but reported also elsewhere in Georgia (Inashvili 1986) and the Caucasus. However, its rarity in the area is surprising.

\*39. *Cladonia stellaris* (Opiz) Pouz. & Vězda, *Preslia* 43: 196 (1971)

syn. *C. alpestris* (L.) Rabenh.

There is probably only one correct Georgian record of this arctic to boreal, circumpolar species (Savicz 1962). Because the specimen is so old (from 1873) and no recent records are available, this conspicuous species may have disappeared from Georgia, due to grazing, for instance.

40. *Cladonia subulata* (L.) F.H.Wigg., *Prim. Fl. Holsat. (Kiliae)*: 90 (1780)

syn. *C. cornutoradiata* (Leight.) Sandst.

This species grows on bare soil, earth banks or open grasslands. It has a subcosmopolitan distribution with continental tendencies (Ahti & Stenroos 2013). It was collected at 850-2750 m in Imereti, Kakheti, Kvemo Kartli, Mtskheta-Mtianeti, Racha-Lechkhumi - Kvemo Svaneti, Samegrelo-Zemo Svaneti, Samtskhe-Javakheti and Shida Kartli.

\*41. *Cladonia sulphurina* (Michx.) Fr., *Lich. Eur. Reform. (Lund)*: 237 (1831)

It grows on rotten wood, tree bases or humose soil. This is a circumpolar species with primarily arctic to boreal distribution but with some outliers in temperate areas and also known in the Southern Hemisphere (Ahti & Stenroos 2013). A common species collected at 1700-2600 m in Adjara, Racha-Lechkhumi - Kvemo Svaneti, Samtskhe-Javakheti and Shida Kartli. Earlier this species was included in *C. deformis*.

\*42. *Cladonia symphylicarpa* (Flörke) Fr., *Sched. Crit. Lich. Suec.* 8-9. 20 (1826)

incl. *C. dahliana* Kristinsson

This is a terricolous, highly calciphilous species with two chemotypes encountered in

Georgia: one with atranorin, norstictic and connorstictic acids, and the other with atranorin, psoromic and conpsoromic acids. Earlier it has been much confused with *C. cariosa*. It has a Holarctic distribution with some outliers in South America (Ahti & Stenroos 2013). It was collected in Kvemo Kartli, Mtskheta-Mtianeti, Imereti and Samegrelo-Zemo Svaneti.

43. *Cladonia uncialis* (L.) F.H. Wigg., Prim. Fl. Holsat. (Kiliae): 90 (1780)

This terricolous species has a circumpolar, arctic to temperate distribution (Ahti & Stenroos 2013). It is very rare, only collected in

Adjara and Samegrelo-Zemo Svaneti. Only recently the species was recorded from one place (Shusha) in Azerbaijan as well (Alverdieva & Novruzov 2014, Ahti et al. 2016). The specimens represent the continental race subsp. *uncialis*.

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### Key to the *Cladonia* species occurring in Georgia

1. Primary thallus usually absent ..... 2
1. Primary thallus always present, dominant or not ..... 11
2. Podetia without cortex ..... 3
2. Podetia always corticated, at least at the base ..... 6
3. Thallus P- ..... 4
3. Thallus P+ red ..... 5
4. Surface of podetia even, podetia forming dense semiglobose heads ..... *C. stellaris*
4. Surface of podetia usually verrucose, podetia not forming dense semiglobose heads ... *C. mitis*
5. Surface of podetia even, K+ yellow ..... *C. rangiferina*
5. Surface of podetia usually verrucose, K- ..... *C. arbuscula*
6. Surface of podetia little corticated at base, sorediate ..... *C. cyanipes*
6. Surface of podetia corticated throughout, esorediate ..... 7
7. Podetia yellowish, usually browned apices ..... 8
7. Podetia greyish, brownish or greyish ..... 9
8. Podetia with spiny apex ..... *C. uncialis*
8. Podetia with narrow scyphose apex ..... *C. amaurocraea*
9. Podetia brown greenish, algal layer continuous ..... 10
9. Podetia grey greenish, richly branched, algal layer discontinuous ..... *C. rangiformis*
10. Podetia base reddish brown to black, irregularly branched ..... *C. macroceras*
10. Podetia base not melanotic ..... *C. furcata*
11. Primary thallus dominant, very rarely with podetia ..... 12
11. Primary thallus no dominant, podetia very common ..... 14
12. Squamules yellowish below ..... *C. foliacea*
12. Squamules withish below ..... 13
13. Squamules large (5-20 mm long), thick, glaucous to grey greenish above with brownish margins, P+ yellow ..... *C. symphylicarpa*
13. Squamules small (2-10 mm long), thin, elongate to crenulate without brownish margins, P+ red ..... *C. caespiticia*
14. Podetia scyphose ..... 15
14. Podetia no scyphose ..... 31
15. Surface of podetia sorediate ..... 16
15. Surface of podetia no sorediate ..... 23
16. Podetia yellowish ..... 17
16. Podetia white greyish ..... 20
17. Surface of podetia granulose sorediate ..... *C. pleurota*
17. Surface of podetia farinose sorediate ..... 18
18. Podetia with longitudinally split ..... *C. sulphurina*
18. Podetia without longitudinal split ..... 19
19. Apothecia red ..... *C. deformis*



19. Apothecia ochraceous .....	<i>C. carneola</i>
20. Podetia P+ yellow, basal squamules farinose-sorediate on the lower parts, apothecia red but not frequent .....	<i>C. digitata</i>
20. Podetia P- or P+ red, apothecia brownish .....	21
21. Podetia P-, with open scyphi .....	<i>C. cenotea</i>
21. Podetia P+ red, without open axils .....	22
22. Surface of podetia completely farinose-sorediate, white greenish .....	<i>C. fimbriata</i>
22. Surface of podetia sorediate in upper parts, grey greenish .....	<i>C. conista</i>
23. Apothecia red .....	24
23. Apothecia brown .....	25
24. Surface of podetia with plaques in upper part .....	<i>C. borealis</i>
24. Surface of podetia granulose in upper part .....	<i>C. coccifera</i>
25. Primary thallus persistent with large squamules .....	26
25. Primary thallus persistent with smallest squamules .....	27
26. Primary thallus with marked veins underside, podetia with bullate squamules, thallus K- .....	<i>C. cyathomorpha</i>
26. Primary thallus without marked veins, basal part melanotic, podetia without bullate squamules, thallus K+ yellow turning red .....	<i>C. macrophyllodes</i>
27. Surface of podetia granulose sorediate .....	<i>C. chlorophaea</i>
27. Surface of podetia no sorediate .....	28
28. Base of podetia melanotic .....	29
28. Base of podetia no melanotic .....	30
29. Surface of podetia verruculose, shiny .....	<i>C. libifera</i>
29. Surface of podetia dull, minutely arachnoid or pruinose .....	<i>C. phyllophora</i>
30. Podetia only with rounded granules and with thick primary thallus .....	<i>C. pocillum</i>
30. Podetia only with flat granules similar to small plates .....	<i>C. pyxidata</i>
31. Apothecia red .....	32
31. Apothecia brown or ochraceous .....	33
32. Surface of podetia corticated or granulose sorediate, P-, K- .....	<i>C. floerkeana</i>
32. Surface of podetia no corticated and farinose sorediate, P+ yellow, K+ yellow ....	<i>C. macilenta</i>
33. Apothecia ochraceous .....	34
33. Apothecia brown .....	35
34. Surface of podetia sorediate .....	<i>C. bacilliformis</i>
34. Surface of podetia corticated .....	<i>C. botrytes</i>
35. Surface of podetia sorediate or granulose .....	36
35. Podetia no sorediate or with squamules .....	41
36. Podetia sorediate in upper parts .....	<i>C. cornuta</i>
36. Podetia mostly sorediate or granulose .....	37
37. Podetia farinose sorediate .....	38
37. Podetia granulose sorediate, K+ yellow turning red .....	<i>C. acuminata</i>
38. Podetia P- .....	<i>C. rei</i>
38. Podetia P+ red .....	39
39. Podetia unbranched .....	<i>C. coniocraea</i>
39. Podetia branched .....	40
40. With homosekikaic acid .....	<i>C. rei</i>
40. Without homosekikaic acid .....	<i>C. subulata</i>
41. Surface of podetia smooth corticated .....	<i>C. gracilis</i>
41. Surface of podetia with squamules .....	42
42. Podetia with open axils and densely squamose .....	<i>C. squamosa</i>
42. Podetia with surface areolate-corticated and fissurate .....	43
43. Thallus K+ yellow .....	<i>C. cariosa</i>
43. Thallus K- .....	<i>C. decorticata</i>

## Annexe 1. Selected specimens examined

### *Cladonia acuminata* (Ach.) Norrl.

ADJARA: Kobuleti, Chakvistavi, Chakvi river, soil, 10.IX.1977, Ts. Inashvili (TBI5013512). MTSKHETA-MTIANETI: Dusheti, grazed meadow glade in *Acer-Quercus* forest, along river, slaty rocks, 100 m, 20.VIII.2015, T. Ahti 75055 (H). Dusheti, Guro, Aragvi river, N slope, shrubs, soil, 14.VIII.1959, Ts. Inashvili (TBI5011481). Dusheti, Kistani, road Zhinvali-Barisakho-Shatili, Arguni, bank river, 42°35'20"N, 45°05'46"E, vertical slates, 2000 m, 20.VIII.2015, T. Ahti, A.R. Burgaz, I. Kupradze & A. Jorjadze (MACB109378). Dusheti, Pshav-Khevsureti Range, Kistani, Datvisjvari Pass, road Zhinvali-Barisakho-Shatili, 42°31'20"N 45°03'22"E, pasture quartzite, 2670 m, 20.VIII.2015, T. Ahti, A.R. Burgaz, I. Kupradze & A. Jorjadze (MACB109379). SAMEGRELO-ZEMO SVANETI: Mestia, Ushguli, 1800 m, 07.VIII.1963, Ts. Inashvili (TBI5013561).

### *Cladonia amaurocraea* (Flörke) Schaer.

MTSKHETA-MTIANETI: Dusheti, Asa river, Tseylam mt., forest edge, soil, 2200 m, 05.VIII.1960, K. Kimeridze (TBI5015393, TBI5002370).

### *Cladonia arbuscula* (Wallr.) Flot.

ABKHAZIA: Gagra, Akvara, Ritsa lake, Iupshara river, 01.XI.1934, M. Sakhokia (TBI). Gagra, Adzapshi river, glacier moraines, 2300 m, 09.VII.1934, M. Sakhokia (TBI5011731). Ibidem, fir-beech forest, soil, 2300 m, 19.X.1934, M. Sakhokia (TBI5011730). Gagra, Gyuzle, Gagra Range, pine and birch forest, soil, 2200 m, 12.VII.1962, Ts. Inashvili (TBI5011758). Sokhumi, Bzipi forest, *Berberis-Corylus*, mossy rocks, 1600 m, 20.II.1934, A. Dolukhanov (TBI5000447). Ibidem, *Quercus* forest, mossy rocks, 1600 m, 20.IX.1934, A. Dolukhanov (TBI). ADJARA: Shuakhevi, Mareti, 06.VIII.1910, N. Popov (TBI5015596, TBI5002374). GURIA: Chokhatauri, Bakhmaro, forest, soil, 24.VIII.1924, Z. Kutsenko (TBI5011747). Chokhatauri, Bakhmaro, Sakornia mt., *Fagus-Picea* forest, rotten tree, 8.VIII.1936, V. Kozlovsky (TBI5000449). KAKHETI: Akhmeta, Alatovani, Mtatusheti, 07.VII.1935, N. Ketskhoveri (TBI5008486). Akhmeta, Mtatusheti, Alazani river sources, *Betula* for-

est, rocks and soil, 2750 m, 21.VIII.1953, K. Kimeridze (TBI5000453). Ibidem, 1800 m, K. Kimeridze (TBI). Akhmeta, Omalo, 2000 m, 07.VIII.2014, K. Batsatsashvili & I. Kupradze (TBI). Akhmeta, Omalo, Pinus, rotten stub, 2100 m, 13.V.1958, K. Kimeridze (H, TBI5000455). Akhmeta, Shenako plateau, Pirikiti Alazani river, soil, 02.V.1988, K. Kimeridze & N. Chelidze (TBI5016059). Dedoplistskaro, Jelal-Oghly vicinity, Datvis-mta mt., rocks & soil, 31.VII.1920, A. Shelkovnikov (TBI5000444). MTSKHETA-MTIANETI: Dusheti, Aknekhi mt., N slope, meadow, soil, 2600 m, 14.VIII.1959, Ts. Inashvili (TBI5002277). Dusheti, Anatori pass, rocks, 2600 m, 13.VIII.1959, Ts. Inashvili (TBI5002697). Dusheti, Barisakho, logs, 1400 m, 23.VII.1959, Ts. Inashvili (TBI5016110). Dusheti, Guro, Aknekhi mt., *Betula* forest, rocks, 2600 m, 14.VIII.1959, Ts. Inashvili (TBI5016108). Dusheti, Kistani, road Zhinvali-Barisakho-Shatili, Arguni, bank river, 42°35'20"N, 45°05'46"E, vertical slates, 2000 m, 20.VIII.2015, T. Ahti, A.R. Burgaz, I. Kupradze & A. Jorjadze (MACB109381). Dusheti, Mitkuli river, forest edge, mossy rocks, 29.VIII.1937, D. Grigorashvili (TBI5011749). Dusheti, Mitkuli river, *Pinus* and *Corylus* forest, mosses, 29.VIII.1937, D. Grigorashvili (TBI5015506). Dusheti, Roshka, Abudelaury lakes, *Juniperus* open woodland, soil, 2400 m, 25.VIII.1961, Ts. Inashvili (TBI5002278). Dusheti, Zetukis Tsveri mt., *Pinus*, rotten log, 14.VIII.1937, D. Grigorashvili (TBI). Kazbegi, Mtiuleti, Chachi river, mossy rocks, 2700 m, 17.VIII.1958, K. Kimeridze (TBI5000456). Ibidem, *Pinus* forest, soil, 2600 m, 17.VIII.1958, K. Kimeridze (TBI5011755). Ibidem, *Rhododendron caucasicum* shrubs, soil, 2450 m, 16.VIII.1958, K. Kimeridze (TBI). Kazbegi, Mtiuleti, Devdoraki river, 2000 m, 14.VII.1971, Ts. Inashvili (TBI5000459). Ibidem, N slope, 2500 m, 14.VII.1971, Ts. Inashvili (TBI5000460). Ibidem, mossy rocks, 2700 m, 07.IX.1957, K. Kimeridze (TBI5000454). Kazbegi, Devdoraki river, shaded mossy rocks, 09.VII.1957, K. Kimeridze (TBI). Kazbegi, Devdoraki river, 2500 m, 20.VIII.1957, K. Kimeridze (TBI5011752). Kazbegi, Gergeti, Datvis Tke [Bear forest], *Pinus* forest, 28.VIII.1944, M. Bakradze (TBI). Kazbegi, Stepantsminda,



Devdoraki, 2000 m, 14.VII.1971, Ts. Inashvili (TBI5011486). Kazbegi, Stepantsminda, Devdoraki, 2800 m, 07.IX.1957, K. Kimeridze (TBI5011753). RACHA-LECHKHUMI - KVEMO SVANETI: Ambrolauri, Khikha mt., Krikhula river, *Fagus-Picea* forest, soil, 2200 m, 18.VIII.1982, Ts. Inashvili (TBI5015509). Ibidem, mossy rocks (limestone), 2000 m, 18.VIII.1982, Ts. Inashvili (TBI5002371). Oni, Chanchakhi river, *Picea-Abies* forest, soil, 1600 m, 28.VIII.1950, Pakhunova (TBI5011751). SAMEGRELO-ZEMO SVANETI: Mestia, Dolra river, Mazeri slope, forest edge, soil, 2000 m, 29.VII.1976, Ts. Inashvili (TBI5000466). Mestia, Becho Pass, scree in open area, 2200 m, VIII.1976, Ts. Inashvili (TBI5011763). Mestia, Becho, Dolra river sources, 2200 m, 29.VII.1976, Ts. Inashvili (TBI5000465). Mestia, Dolra river, Mazeri mt., 2000 m, 03.VIII.1944, D. Sosnovsky (TBI5000478). SAMTSKHE-JAVAKHETI: mossy rocks (limestone), 09.IX.1938, Sh. Nakhutsrishvili (TBI5011750). Akhaltsikhe, Akhaltsikhe, Ghreli, Ghreli-Sapara Monastery, 1050 m, 14.VII.1968, Ts. Inashvili (TBI5000458). Borjomi, Bakuriani, Tskhratskaro mt., *Fagus* forest, stub, 900 m, 01.VII.1916, I. Lepchenko (TBI5000470). Ibidem, N slope, scree, 2600 m, 22.V.1916, V. Kozlovsky (TBI5000441). Borjomi, Ktsia river, Nariani mt., NW slope, 23.VIII.1965, N. Chelidze (TBI5011482). Borjomi, Mitarbi, Borjomi river, Mitarbi-Kokhta mt., forest, mossy rocks, 29.VI.1916, N. Voronikhin (TBI). SHIDA KARTLI: Java, Edisa, *Picea-Abies* forest, soil, 2200 m, 08.IX.1981, Ts. Inashvili (TBI5000467). Ibidem, *Picea-Fagus* forest, soil, 2200 m, 21.VII.1973, Ts. Inashvili (TBI5000463). Ibidem, Ermani, Keli lake, *Picea-Alnus* forest, soil, 2750 m, 31.VII.1973, Ts. Inashvili (TBI5000464, TBI5000462). Java, Edisa-Sgubiri, 04.VIII.1973, Ts. Inashvili (TBI5000461).

***Cladonia bacilliformis* (Nyl.) Sarnth.**

SAMTSKHE-JAVAKHETI: Borjomi, Kvabiskhevi, mossy rocks, 1900 m, 08.IX.1986, Ts. Inashvili (TBI5003109).

***Cladonia borealis* S. Stenroos**

MTSKHETA-MTIANETI: Dusheti, Kistani, road Zhinvali-Barisakho-Shatili, Arguni, bank river, 42°35'20"N, 45°05'46"E, vertical slates, 2000 m, 20.VIII.2015, T. Ahti, A.R. Burgaz, I. Kupradze & A. Jor-

jadze (MACB109382). Dusheti, Pshav-Khevsureti Range, Kistani, Datvisjvari Pass, road Zhinvali-Barisakho-Shatili, 42°31'20"N, 45°03'22"E, pasture quartzite, 2670 m, 20.VIII.2015, T. Ahti, A.R. Burgaz, I. Kupradze & A. Jorjadze (MACB109383). Dusheti, Roshka, Abudelaure lakes, 2400 m, 27.VIII.1961, Ts. Inashvili (TBI5011529). Ibidem, *Pyrus* stub, 2650 m, 16.VIII.1956, I. Dylevskaya (TBI5016068). Kazbegi, Stepantsminda, Devdoraki, soil, 2000 m, 14.VII.1971, Ts. Inashvili (TBI5015366). RACHA-LECHKHUMI - KVEMO SVANETI: Lentekhi, Latkviani Pass, *Rhododendron* shrubs, 2200 m, 26.VII.1963, Ts. Inashvili (TBI5000433). SAMEGRELO-ZEMO SVANETI: Mestia, Poshdali, 2400 m, 18.VIII.1963, Ts. Inashvili (TBI5013520). SAMTSKHE-JAVAKHETI: Borjomi, Bakuriani, Tskhratskaro mt., *Pinus-Quercus* forest, mossy rocks, 01.VII.1916, N. Voronikhin (TBI5015529). SHIDA KARTLI: Java, Edisa-Ermani, 2000 m, 03.VIII.1973, Ts. Inashvili (TBI5011723).

***Cladonia botrytes* (K.G. Hagen) Willd.**

RACHA-LECHKHUMI - KVEMO SVANETI: Oni, Glola, *Fagus-Taxus* forest, stump, 1500 m, 19.VII.1986, Ts. Inashvili (TBI5003111). Oni, Glola, birch forest, soil, 1800 m, 1963, Ts. Inashvili (TBI5002701). SAMEGRELO-ZEMO SVANETI: Mestia, Mazeri, Ushba mt., riparian forest, soil, 18.VII.2014, Ts. Inashvili (TBI). Mestia, Nakra river sources, soil, 1500 m, 03.VIII.1976, Ts. Inashvili (TBI5003075). SAMTSKHE-JAVAKHETI: Borjomi, Kvabiskhevi, subalpine zone, 2800 m, 09.VIII.1986, Ts. Inashvili (TBI5002287). Borjomi, Kvabiskhevi, subalpine zone, 2800 m, 09.VIII.1986, Ts. Inashvili (TBI5003110).

***Cladonia caespiticia* (Pers.) Flörke, Clad. Comm.: 8 (1828)**

ADJARA: Batumi, Botanical Garden, Mtsvane Kontskhi, on *Acer*, 19.V.1987, L.G. Biazrov (H). MTSKHETA-MTIANETI: Dusheti, Pshav-Khevsureti Range, Maghrani, road Zhinvali-Barisakho-Shatili, Aragvi, river bank, 42°25'55"N, 44°56'42"E, close to *Fagus orientalis* forest, slates, 1200 m, 20.VIII.2015, T. Ahti, A.R. Burgaz, I. Kupradze & A. Jorjadze (MACB109384). SAMTSKHE-JAVAKHETI: Borjomi, Bakuriani, *Pinus-Betula* forest, stub, 1600 m, 06.VII.1967, Ts. Inashvili (TBI5008738).

***Cladonia cariosa* (Ach.) Spreng.**

GURIA: Chokhatauri, Bakhmaro, *Picea-Betula* forest, mossy rocks, 2000 m, 21.VIII.1964, Ts. Inashvili (TBI5016010). KVEMO KARTLI: Tetrtskaro, Manglisi, 01.IX.1909, N. Nikolaev (TBI5000491). Tetrtskaro, Manglisi, 1800 m, 25.V.2003, A. Jorjadze (TBI5002927). MTSKHETA-MTIANETI: Dusheti, Kistani, road Zhinvali-Barisakho-Shatili, Arguni, bank river, 42°35'20"N, 45°05'46"E, vertical slates, 2000 m, 20.VIII.2015, T. Ahti, A.R. Burgaz, I. Kupradze & A. Jorjadze (MACB109385). Dusheti, Kistani, road Zhinvali-Barisakho-Shatili, Arguni, bank river, 42°35'20"N 45°05'46"E, vertical slates, 2000 m, 20.VIII.2015, T. Ahti, A.R. Burgaz, I. Kupradze & A. Jorjadze (MACB109386). Dusheti, Shuapkho, 1200 m, 31.VI.1961, Ts. Inashvili (TBI5015335). RACHA-LECHKHUMI - KVEMO SVANETI: Lentekhi, Sasashi, forest, 21.VII.1963, Ts. Inashvili (TBI5016009). Lentekhi, Sasashi, forest, stub, 22.VII.1963, Ts. Inashvili (TBI5016061). Oni, Glola, forest, soil, 1500 m, 18.VII.1963, Ts. Inashvili (TBI5016008). Oni, Kvedrula, soil, 2300 m, 16.VIII.1982, Ts. Inashvili (TBI5002226). SAMEGRELO-ZEMO SVANETI: Mestia, Becho, Dolra river sources, mossy soil, 2200 m, 29.VII.1976, Ts. Inashvili (TBI5002693). Mestia, Chuberi, Nenskra river, *Fagus-Carpinus* forest, soil, 850 m, 20.VII.1976, Ts. Inashvili (TBI5002225). Mestia, Guli, Dolra river, soil, 1800 m, 22.VII.1976, Ts. Inashvili (TBI5012729). Mestia, Lenjeri, *Picea-Fagus* forest, log, 1600 m, 02.VII.1975, Ts. Inashvili (TBI5011493). Mestia, Mazeri, Dolra river, *Festuca* community, soil, 1800 m, 25.VII.1976, Ts. Inashvili (TBI5015336). Ibidem, *Juniperus*, soil, 2000 m, 29.VII.1976, Ts. Inashvili (TBI5015337). Ibidem, steppe, 2000 m, 23.VII.1976, Ts. Inashvili (TBI5002224). SAMT-SKHE-JAVAKHETI: Borjomi, Bakuriani, *Picea* forest, 1700 m, 17.VIII.1967, Ts. Inashvili (TBI5011491). SHIDA KARTLI: Kareli, Dzama river, *Paliurus*, *Rhamnus*, *Ephedra-Spiraea* community, soil, 2300 m, 15.VII.1967, Ts. Inashvili (TBI5011492). Kaspi, Ertatsmin-da, 26.VI.1967 (TBI5002223). Java, Posheta, *Pinus* forest, soil, 03.IX.1947, V. Pakhunova (TBI5002285).

***Cladonia carneola* (Fr.) Fr.**

SAMEGRELO-ZEMO SVANETI: Mestia, Becho, Dolra river sources, on *Abies*, 2000 m, 31.VII.1976, Ts. Inashvili (TBI5002681).

***Cladonia cenotea* (Ach.) Schaer.**

ADJARA: Khulo, Danisparauli, Goderdzi Pass, soil, 2000 m, 15.VII.1968, Ts. Inashvili (TBI5015341). GURIA: Chokhatauri, Bakhmaro, 2000 m, 21.VIII.1964, Ts. Inashvili (TBI5013511). IMERETI: Kutaisi, Sairme, *Quercus* forest, soil, 930 m, 24.IX.1970, Ts. Inashvili (TBI5003074). KAKHETI: Akhmeta, Dartlo, shrubs, soil, 1900 m, 21.VIII.1986, D. Mtskhvetadze (TBI5002207). Akhmeta, Jvarboseli, *Punica granatum* community, soil, 12.VIII.2014, K. Batsatsashvili & A. Arabidze (TBI). Akhmeta, Omalo, 2000 m, 13.V.1958, Sh. Nakhutsrishvili (TBI5003404). MTSKHETA-MTIANETI: Dusheti, Roshka, Abudelaure lakes, forest, stub, 2600 m, 27.VIII.1961, Ts. Inashvili (TBI5011558). RACHA-LECHKHUMI - KVEMO SVANETI: Lentekhi, Goldashi mt., 2500 m, 27.VII.1979, Ts. Inashvili (TBI5016014). Lentekhi, Sakhare, *Quercus-Carpinus* forest, on rocks and *Hylocomium splendens*, 27.VII.1963, Ts. Inashvili (TBI5013509). Lentekhi, Sasashi, Jvari pass, at lake, rock cracks, 2500 m, 26.VII.1963, Ts. Inashvili (TBI5013576). Lentekhi, Sasashi, Latkviari, 2000 m, 23.VII.1963, Ts. Inashvili (TBI5013510). Oni, Chanchakhi river, *Picea-Abies* forest, soil, 1600 m, 28.VIII.1950, Sh. Nakhutsrishvili (TBI5002203). Ibidem, soil, 1600 m, 28.VIII.1950, Sh. Nakhutsrishvili (TBI5002205). Oni, Glola, *Betula* forest, rocks and soil, 1500 m, 13.VII.1963, Ts. Inashvili (TBI5016012). Oni, Glola, forest edge, stub, 1500 m, 19.VII.1963, Ts. Inashvili (TBI5003073). Oni, Glola, Rioni river, 1600 m, 19.VII.1963, Ts. Inashvili (TBI5011497). Oni, Shovi, meadow, soil, 1550 m, 10.IX.1964, Ts. Inashvili (TBI5015339). Oni, Shovi, meadow, soil, 1550 m, 10.IX.1964, Ts. Inashvili (TBI5015340). Oni, Shovi, meadow, soil, 1550 m, 10.IX.1964, Ts. Inashvili (TBI5016067). Tsageri, Khvamli mt., *Fagus-Picea* forest, rotten log, 21.VII.1966, Ts. Inashvili (TBI5011498). Tsageri, Tsageri, Tsikuri Range, Jonoula river, upper, E slope, soil, 25.VII.1980, Ts. Inashvili (TBI5013555). Ibidem, forest oak, 1800 m, 26.VII.1980, Ts. Inashvili (TBI5011507). SAMEGRELO-ZEMO SVANETI: Abasha, Vedi, Khaishurari river, *Fagus* forest, mossy rocks, 1600 m, 17.VIII.1976, Ts. Inashvili (TBI5016013, 5002667). Ibidem, tree base, 1550 m, 17-VIII-1976, Ts. Inashvili (TBI5011506). Ibidem, stones and soil layer, 1600 m, 17.VIII.1976, Ts. Inashvili (TBI5011505). Ibidem, rocks, 1600 m,

17.VIII.1976, Ts. Inashvili (TBI5002665). Mestia, Becho Pass, forest, soil, 2200 m, 31.VII.1976, Ts. Inashvili (TBI5011502). Mestia, Becho, Dolra river sources, 2000 m, 31.VII.1976, Ts. Inashvili (TBI5002664). Mestia, Chuberi, Nenskra river, *Picea* forest, rocks, 1000 m, 27.VII.1976, Ts. Inashvili (TBI5002668). Ibidem, forest edge, stones & soil cover, 800 m, 22.VII.1976, Ts. Inashvili (TBI5002206). Mestia, Chuberi, Tita, Nakra river, 1000 m, 22.VII.1976, Ts. Inashvili (TBI5002928). Mestia, Dolra river, *Juniperus-Cotinus coggygria*, soil, 2000 m, 10.VIII.1976, Ts. Inashvili (TBI5011501). Ibidem, Mazeri mt., soil between boulders, 1900 m, 25.VII.1976, Ts. Inashvili (TBI5003555). Ibidem, *Fagus* forest, mosses, 1900 m, 25.VII.1976, Ts. Inashvili (TBI5011504). Mestia, Nakra river, 1500 m, 02.VIII.1976, Ts. Inashvili (TBI5002666). Mestia, NW slope, 1600 m, 28.VII.1975, Ts. Inashvili (TBI5015342). Mestia, Nakra river sources, forest, 1700 m, 03.VIII.1976, Ts. Inashvili (TBI5002663). Ibidem, shrubs, soil, 1650 m, 03.VIII.1976, Ts. Inashvili (TBI5011503). Ibidem, soil, 1500 m, 03.VIII.1976, Ts. Inashvili (TBI5003075). SAMTSKHE-JAVAKHETI: Borjomi, Bakuriani, Kokhta mt., *Buxus* shrubs, soil, 1700 m, 26.VIII.1925, V. Pakhunova (TBI5011494). Ibidem, *Picea* forest & *Rhododendron luteum*, mosses, 1700 m, 26.VIII.1925, V. Pakhunova (TBI5016011). Borjomi, Bakuriani, Mukheri mt., *Buxus-Carpinus* community, stub, 10.VIII.1925, V. Pakhunova (TBI5002204). Borjomi, Bakuriani, *Picea-Fagus* forest, soil, 20.IX.1920, N. Voronikhin (TBI5002202). Ibidem, *Rhododendron caucasicum* shrubs, soil, 01.VI.1916, V. Kozlovsky (TBI5002200). Borjomi, Bakuriani, Tskhratskaro mt., birch forest, birch trunk base, 2000 m, 22.V.1916, V. Kozlovsky (TBI5002201). Borjomi, Likani, on wood, 950 m, 25.VIII.1985, Ts. Inashvili (TBI5011508). Borjomi, Likani, eutrophic peat logs, 1800 m, 09.IX.1987, Ts. Inashvili (TBI5002669). SHIDA KARTLI: Gori, Boshuri, Tana river, *Rhododendron caucasicum* shrubs, soil, 1400 m, 17.VII.1967, Ts. Inashvili (TBI5003576). Java, Edisa, *Picea-Abies* forest, soil, 2200 m, 31.VII.1973, Ts. Inashvili (TBI5011499).

***Cladonia chlorophaea*** (Flörke ex Sommerf.) Spreng.

ABKHAZIA: Gagra, Gyuzle, Gagra Range, Gyuzle-Gelgeluki, *Fagus-Picea* forest, stub, 12.VII.1962, Ts. Inashvili (TBI5002336).

Ibidem, *Picea-Carpinus betulus* forest, soil, 2250m, 12.VII.1962, Ts. Inashvili (TBI5013533). KAKHETI: Akhmeta, Shenako, shrubs with mosses, 1960 m, 10.VIII.2014, K. Batsatsashvili & I. Kupradze (TBI). Sagarejo, Antokis-khevi river, *Fagus* forest, mosses, 1150 m, 01.VIII.1962, N. Chelidze (TBI5015360). KVEMO KARTLI: Tetritskaro, Alekseevka, N slope, forest edge, mossy rocks, 1625 m, 27.VIII.1966, Ts. Inashvili (TBI5008488). MTSKHETA-MTIANETI: Dusheti, Ananuri, Kvirike mt., Aragvi river, *Fagus* forest, soil, 10.V.1959, Ts. Inashvili (TBI5016473). Dusheti, Anatori Pass, rocks, 2600 m, 13.VIII.1959, Ts. Inashvili (TBI5003402). Dusheti, Guro river, 1700 m, 14.VIII.1959, K. Kimeridze (TBI5003403). Dusheti, Guro, rocks, 2400 m, 14.VIII.1959, Ts. Inashvili (TBI). Dusheti, Kistani, road Zhinvali-Barisakho-Shatili, Arguni, bank river, 42°35'20"N, 45°05'46"E, vertical slates, 2000 m, 20.VIII.2015, T. Ahti, A.R. Burgaz, I. Kupradze & A. Jorjadze (MACB109388). Dusheti, Pshav-Khevsureti Range, Kistani, Datvisjvari Pass, road Zhinvali-Barisakho-Shatili, 42°31'20"N, 45°03'22"E, pasture quartzite, 2670 m, 20.VIII.2015, T. Ahti, A.R. Burgaz, I. Kupradze & A. Jorjadze (MACB109389). Dusheti, Pshav-Khevsureti Range, Maghrani, road Zhinvali-Barisakho-Shatili, Aragvi, river bank, 42°25'55"N, 44°56'42"E, close to *Fagus orientalis* forest, slates, 1200 m, 20.VIII.2015, T. Ahti, A.R. Burgaz, I. Kupradze & A. Jorjadze (MACB109387). Dusheti, Shatili, 17.VII.1959, Ts. Inashvili (TBI5002301). Dusheti, Shuapkho, Aragvi river, riverside boulders, 1200 m, 31.VIII.1961, Ts. Inashvili (TBI5002286). Kazbegi, Stepantsminda, Alpine Ecology Institute, limestone, 1900 m, 05.VIII.1976, Ts. Inashvili (TBI5011726). Mtskheta, Zedazeni, Saguramo Range, 06.III.1962, Ts. Inashvili (TBI5013563). Tianeti, Tianeti-Khevsurtsopeli, 23.VI.2014, K. Batsatsashvili & I. Kupradze (TBI). RA-CHA-LECHKHUMI - KVEMO SVANETI: Oni, Shovi, among *Rhododendron caucasicum* shrubs, 1550 m, 10.IX.1964, Ts. Inashvili (TBI5015340). SAMEGRELO-ZEMO SVANETI: Mestia, NW slope, 08.IX.1976, Ts. Inashvili (TBI5014036). Mestia, rock cracks, 1600 m, 02.VII.1975, Ts. Inashvili (TBI5011522). Mestia, Ughviri Pass, 1930 m, 02.IX.1976, Ts. Inashvili (TBI5000425). Borjomi, Bakuriani, Andeziti, stub, 18.VII.1955, Ts. Inashvili (TBI5011714). SAMTSKHE-JA-



VAKHETI: Borjomi, Tavkvetili mt., N slope, Pinus forest, soil, 18.VIII.1967, N. Chelidze (TBI5011591, 5002312). Ibidem, NW slope, *Quercus* forest, stub, 18.VIII.1967, N. Chelidze (TBI). Aspindza, Didighele river, mossy rocks, moraine, 1500 m, 21.VII.1968, Ts. Inashvili (TBI5002262). SHIDA KARTLI: Akhlagori, Tskhradzmula river, forest, soil, 1600 m, 19.VIII.1983, Ts. Inashvili (TBI5016021).

***Cladonia coccifera* (L.) Willd.**

MTSKHETA-MTIANETI: Dusheti, Roshka, Aragvi river, Abudelaure lakes, rocks and soil, 2400 m, 27.VIII.1961, Ts. Inashvili (TBI5011529). RACHA-LECHKHUMI - KVEMO SVANETI: Lentekhi, Kokuldashi, Koruldashi glacier, 2400 m, 01.VIII.1963, Ts. Inashvili (TBI5016022).

***Cladonia coniocraea* (Flörke) Spreng.**

ABKHAZIA: Gagra, Gelgeluki, Gagra Range, SW slope, 1500 m, 15.VII.1962, Ts. Inashvili (TBI5011531). Gagra, Lidzava, Bichvinta-Miusera Strict Nature Reserve, 100 m, 25.VI.1980, Ts. Inashvili (TBI5011540). Ibidem, oak-hornbeam forest, soil, 100 m, 25.VI.1980, Ts. Inashvili (TBI5011539). Ibidem, soil in oak hornbeam forest, 100 m, 04.VI.1973, A. Dolukhanov (TBI). Gagra, Lidzava, Bichvinta-Miusera Strict Nature Reserve, soil, 100 m, 26.VI.1980, Ts. Inashvili (TBI5011535). Gali, Mzhavet-skali, Sakeni river, conifer forest, 1950 m, 16.VII.1961, I. Dylevskaya (TBI5011530). Gali, Sakeni, conifer forest, 1100 m, 14.VII.1961, K. Kanchaveli (TBI5003098). Otingo, 30.VIII.1910, G. Voronov (TBI). ADJARA: Batumi, Batumi Botanical Garden, 100 m, 05.IX.1977, Ts. Inashvili (TBI). Keda, Zendidi, Zendidi-Agara, Adjaraistkali river, dry ravine, soil, 550 m, 02.VII.1910, G. Voronov (TBI5000492). Kobuleti, Chakvi, soil, 10.IX.1977, Ts. Inashvili (TBI5002369). Kobuleti, Chakvistavi, Chakvi river, 10.IX.1977, Ts. Inashvili (TBI5013512). GURIA: Chokhatauri, Bakhmaro, soil, 2000 m, 21.VIII.1964, Ts. Inashvili (TBI5014037). Ozurgeti, Ozurgeti, *Pinus-Abies* forest, wood, 1800 m, 05.VII.1959, I. Dylevskaya (TBI5011555). IMERETI: Kutaisi, Sairme, Baghdati, birch forest, soil, 09.VIII.1960, Ts. Inashvili (TBI5013521). Kutaisi, Sairme, Sairme resort, 930 m, 24.IX.1970, Ts. Inashvili (TBI5011556). Kutaisi, Sairme, Sairme resort, *Fagus-Carpinus betulus* forest, rotten log, 930 m, 27.VII.1961, Ts. Inashvili (TBI5011689).

Tkibuli, Nakerala Pass, pine forest, stub, 1230 m, 25.IX.1949, A. Kutazeladze (TBI5015368). KAKHETI: Akhmeta, Omalo, humid area, 2000 m, 07.VIII.2014, K. Batsatsashvili & I. Kupradze (TBI). Akhmeta, Omalo, *Pinus* forest, pine tree, 2200 m, 13.V.1958, I. Nakhutsrishvili (TBI5002247). Akhmeta, Shenako, *Pinus* forest, soil, 1960 m, 10.VIII.2014, K. Batsatsashvili & I. Kupradze (TBI). Sagarejo, Kachreti, *Abies-Fagus* forest, stub, 05.VII.1950, A. Ghviniasvili (TBI5015448). Sagarejo, Lagodekhi, Lagodekhi reserve, Didi Kochalo mt., forest, mossy rocks, 1900 m, 31.VII.1979, K. Tigishvili (TBI5011603). KVEMO KARTLI: Tetritskaro, Alekseevka, *Picea-Abies-Castanea* forest, among mosses, 1450 m, 23.VII.1966, Ts. Inashvili (TBI5008479). MTSKHETA-MTIANETI: Dusheti, Ananuri, Kvirike mt., Aragvi river, *Fagus* forest, soil, 10.V.1959, Ts. Inashvili (TBI5016475). Dusheti, Chinti, 28.VII.1959, Ts. Inashvili (TBI5016069). Dusheti, Nedzikhvi, rotten oak log, 19.VII.1972, Ts. Inashvili (TBI5015377). Dusheti, Roshka, Iglia mt., *Picea-Fagus* forest, stub, 2200 m, 26.VIII.1961, Ts. Inashvili (TBI5016070). Dusheti, Shuapkho, Aragvi river, 1200 m, 31.VIII.1961, Ts. Inashvili (TBI5013522). Mtskheta, Saguramo, *Pinus-Abies* forest, mossy rocks, 18.VII.1959, Ts. Inashvili (TBI5015369). Ibidem, stub, 900 m, 23.III.1963, Ts. Inashvili (TBI5016071). Mtskheta, Zedazeni, Saguramo Range, mossy soil, 06.III.1963, Ts. Inashvili (TBI5016476). Tianeti, *Fagus* forest, rotten log, 23.VI.2014, K. Batsatsashvili & I. Kupradze (TBI). RACHA-LECHKHUMI - KVEMO SVANETI: Ambrolauri, Shaori reservoir, 1175 m, 26.VII.1965, Ts. Inashvili (TBI5013524). Ibidem, soil, 1175 m, 18.VII.1982, Ts. Inashvili (TBI5003099). Ambrolauri, Uravi, mosses, 1650 m, 20.VIII.1951, V. Pakhunova (TBI5002245). Lentekhi, Kheledula river, soil, 12.VII.1979, Ts. Inashvili (TBI5002237). Lentekhi, Kheledula river, forest edge, soil, 1500 m, 12.VIII.1979, Ts. Inashvili (TBI). Lentekhi, Koruldashi, deciduous forest, pear trunk base, 2000 m, 01.VIII.1963, Ts. Inashvili (TBI5011699). Lentekhi, *Picea-Abies* forest, soil, 2000 m, 01.VIII.1963, Ts. Inashvili (TBI5002366). Lentekhi, Lapuri, 2300 m, 25.VII.1979, Ts. Inashvili (TBI5011534). Lentekhi, Lapuri, Tskhenistskali river sources, N slope, *Picea-Castanea* forest, lower part of chestnut trunk, 1900 m, 23.VII.1979, Ts. Inashvili (TBI5015375). Oni, Ghebi,

Shodakedela, soil, 1900 m, 20.VIII.1965, Ts. Inashvili (TBI5016026). Oni, Glola, 1500 m, 18.VII.1963, Ts. Inashvili (TBI5011587, TBI5002308). Ibidem, forest edge, stub, 1500 m, 19.VII.1963, Ts. Inashvili (TBI5003073). Ibidem, *Quercus* forest, rotten stub, 1500 m, 19.VII.1963, Ts. Inashvili (TBI5011586). Ibidem, rock cracks, 1500 m, 19.VII.1986, Ts. Inashvili (TBI5003111). Ibidem, Sakhare lake, 19.VII.1963, Ts. Inashvili (TBI5002306). Oni, Shovi, Mamisoni Pass, 2600 m, 17.VIII.1965, Ts. Inashvili (TBI5016025). Oni, Shovi, meadow, soil, 1550 m, 10.IX.1964, Ts. Inashvili (TBI5016024). Tsageri, 22.VIII.1966, Ts. Inashvili (TBI5011589). Tsageri, Akhachala, Tsikuri massif, Jonoula river sources, mossy soil, 1800 m, 26.VII.1980, Ts. Inashvili (TBI5011538). Tsageri, Khvamli mt., *Fagus-Picea* forest, rotten log, 1600 m, 22.VIII.1966, Ts. Inashvili (TBI5013525). Ibidem, *Fagus-Picea* forest, stub, 1880 m, 21.VII.1966, Ts. Inashvili (TBI5011498). Ibidem, N slope, *Picea-Fagus* forest, rotten stub, 1500-1600 m, 22.VIII.1966, Ts. Inashvili (TBI5002310). Tsageri, Tsikuri massif, Jonoula river, forest, soil, 1800 m, 26.VII.1980, Ts. Inashvili (TBI5011537). Tsageri, Utskheri, 24.VIII.1966, Ts. Inashvili (TBI5002691). SAMEGRELO-ZEMO SVANETI: Mestia, soil, 11.VIII.1963, Ts. Inashvili (TBI5002362). Mestia, Ughviri Pass, soil, 1930 m, 17.VIII.1963, Ts. Inashvili (TBI5016060). Mestia, Adishi, moraines & thin soil cover, 1500 m, 11.VIII.1963, Ts. Inashvili (TBI5011690). Mestia, Becho, Dolra river, soil, 2000 m, 31.VII.1976, Ts. Inashvili (TBI5016050). Mestia, Guli, Dolra river, 2000 m, 28.VII.1976, Ts. Inashvili (TBI5000499). Mestia, Lenjeri, 1600 m, 28.VII.1975, Ts. Inashvili (TBI5011533). Mestia, Mazeri, Ushba base, forest, stub, 18.VII.2014, K. Batsatsashvili & I. Kupradze (TBI). Mestia, Nakra river sources, 1700 m, 1976, Ts. Inashvili (TBI5008470). Mestia, Nakra river sources, soil, 1500 m, 03.VIII.1976, Ts. Inashvili (TBI5003075). Mestia, Nakra river sources, 1700 m, 03.VIII.1976, Ts. Inashvili (TBI5011557). Mestia, Nakra river sources, *Fagus-Picea* forest, stub, 1700 m, 03.VIII.1976, Ts. Inashvili (TBI5002346). Senaki, Kurdzu, 25.VI.1952, V. Shishkin (TBI5012999). SAMTSKHE-JAVAKHETI: Adigeni, Zekari Pass, *Carpinus betulus* forest, mossy rocks, 2100 m, 13.VII.1968, Ts. Inashvili (TBI5000498). Akhaltsikhe, Akuta

mt., *Betula* forest, soil, 2000 m, 16.VII.1968, Ts. Inashvili (TBI5015373). Borjomi, Bakuriani Range, soil, 1750 m, 15.VIII.1967, A. Dolukhanov (TBI5011532). Borjomi, Bakuriani, Kokhta mt., 1700 m, 24.VIII.1925, V. Pakhunova (TBI5015367). Borjomi, Kvabiskhevi, NW slope, soil, 18.X.1937, Ts. Inashvili (TBI5002287). Borjomi, Vorontsov plateau, soil, 03.VIII.1916, I. Lepchenko (TBI). SHIDA KARTLI: Akhagori, Churta river, *Pinus* forest, 1150 m, 21.VII.1983, Ts. Inashvili (TBI5003100). Akhagori, Okhiri, 1700 m, 14.VIII.1983, Ts. Inashvili (TBI5002653). Gori, Boshuri, Tana river, *Picea* forest with *Rhododendrum luteum*, soil, 1400 m, 17.VII.1967, Ts. Inashvili (TBI5015378). Gori, Gori, scree, 20.VII.1910, G. Voronov (TBI). Kareli, Akhaltsikhe, Dzama river, *Abies* forest, log, 15.VII.1967, Ts. Inashvili (TBI5011592). Kareli, Alitsikhe, Dzama river, *Pine* forest & *Rhododendron*, soil, 2200 m, 15.VII.1967, Ts. Inashvili (TBI5002315). Kareli, Tkemlovani, Dzama river, on wood in forest, 2300 m, 13.VII.1967, Ts. Inashvili (TBI5015372). A Java, soil, 2000 m, 09.VII.1981, Ts. Inashvili (TBI5002332). Java, Edisa, Ermani, Didi Liakhvi river, 2440 m, 22.VIII.1968, A. Dolukhanov (TBI5016072). Java, Khtse, riparian forest, soil, 09.VII.1981, Ts. Inashvili (TBI5011606). Java, Kvemo Roki, 08.VIII.1981, Ts. Inashvili (TBI5015376).

Morphotype '*Cladonia ochrochlora* Flörke': ABKHAZIA: Gagra, Lidzava, Bichvinta-Miusera Strict Nature Reserve, soil, 100 m, 26.VI.1980, Ts. Inashvili (TBI5011536). SAMTSKHE-JAVAKHETI: Borjomi, Dabadzveli, Chobiskhevi, soil, 1900 m, 09.IX.1985, Ts. Inashvili (TBI5016073).

### *Cladonia conista* (Ach.) Robbins

ABKHAZIA: Ochamchira, Anaria, Bebesiri lake, 23.VI.1958, Ts. Inashvili (TBI5011510). Ochamchira, Anaria, Bebesiri lake, oak hornbeam forest, soil, 22.VI.1958, Ts. Inashvili (TBI5003093). MTSKHETA-MTIANETI: Dusheti, Shavi Aragvi, 29.VII.1959, V. Gulmagarashvili (TBI). Dusheti, Kistani, road Zhinvali-Barisakho-Shatili, Arguni, bank river, 42°35'20"N, 45°05'46"E, vertical slates, 2000 m, 20.VIII.2015, T. Ahti, A.R. Burgaz, I. Kupradze & A. Jorjadze (MACB109391). Kazbegi, Pirdapira mt., among mosses, 26.VII.1950, I. Dylevskaya (TBI5013513). RACHA-LECHKHUMI - KVE-MOSVANETI: Tsageri, Lashichala, 08.VIII.1961, N. Chikovani (H, TBI5008481). SHIDA KART-

LI: Gori, Boshuri, Tana river, 1400 m, 04.VI.1967, Ts. Inashvili (TBI5002261).

***Cladonia cornuta* (L.) Hoffm.**

MTSKHETA-MTIANETI: Dusheti, Asa river, 09.VIII.1960, K. Kimeridze (TBI5015393). SAMEGRELO-ZEMO SVANETI: Mestia, Mulakhi, spruce-fir forest, stub, 1500 m, 04.VIII.1963, Ts. Inashvili (TBI5011541). SHIDA KARTLI: Java, Edisa, Ermani, Keli lake, 2600 m, 30.VII.1973, Ts. Inashvili (TBI5011681).

***Cladonia cyanipes* (Sommerf.) Nyl.**

SHIDA KARTLI: Java, Sgubiri, alpine zone, mossy rocks, 1900 m, 04.VIII.1973, Ts. Inashvili (TBI5015391).

***Cladonia cyathomorpha* Stirt. ex Walt. Watson**

SAMTSKHE-JAVAKHETI: Borjomi, Bakuriani, Mukheri mt., forest edge, stub, 22.VIII.1925, V. Pakhunova (TBI5015537).

***Cladonia decorticata* (Flörke) Spreng.**

GURIA: Ozurgeti, Ozurgeti, pine forest, stub, 05.VII.1959, I. Dylevskaya (TBI5011555). IMERETI: Kutaisi, Sairmeresort, rocks, 24.IX.1970, Ts. Inashvili (TBI5011556). MTSKHETA-MTIANETI: Dusheti, Shuapkho, Aragvi river, 1200 m, 31.VIII.1961, Ts. Inashvili (TBI5002286). SAMEGRELO-ZEMO SVANETI: Mestia, Nakra river sources, mossy rocks, 03.VIII.1976, Ts. Inashvili (TBI5011557).

***Cladonia deformis* (L.) Hoffm.**

MTSKHETA-MTIANETI: Kazbegi, Stepantsminda, Devdoraki, 1900 m, 14.VII.1971, Ts. Inashvili (TBI5015365). RACHA-LECHKHUMI - KVEMO SVANETI: Lentekhi, Sasashi, *Punica granatum* community, soil, 29.VII.1963, Ts. Inashvili (TBI5011559). SAMEGRELO-ZEMO SVANETI: Abasha, Vedi, Khaishura river, stones and soil layer, 1600 m, 17.VIII.1976, Ts. Inashvili (TBI5011505). Mestia, Nakra river sources, spruce-chestnut forest, lower part chestnut trunk, 1550 m, 03.VIII.1976, Ts. Inashvili (TBI5002234). Mestia, Nakra river sources, *Pinus-Abies* forest, mossy rocks, 1700 m, 03.VIII.1976, Ts. Inashvili (TBI). SAMTSKHE-JAVAKHETI: Borjomi, Bakuriani, *Rhododendron caucasicum* shrubs, soil, 08.IX.1931, V. Pakhunova (TBI5002242). Ibidem, Tshratskaro, *Picea-Abies* forest, rotten tree, 06.IX.1966, Ts. Inashvili (TBI5011560). Ibidem, *Rhododendron caucasicum* shrub edge, 01.VII.1916, N. Voronikhin (TBI5015362).

***Cladonia digitata* (L.) Hoffm.**

GURIA: Chokhatauri, Bakhmaro, *Picea* forest, stub, 2000 m, 21.VIII.1964, Ts. Inashvili (TBI5016010, TBI5013511). RACHA-LECHKHUMI - KVEMO SVANETI: Lentekhi, Sakhare, soil, 27.VII.1963, Ts. Inashvili (TBI5013509). Oni, Shovi, meadow, soil, 1650 m, 21.VIII.1950, V. Pakhunova (TBI5000430). Tsageri, Tsageri, Tsikuri massif, Jonoula river, forest, soil, 1800 m, 26.VII.1980, Ts. Inashvili (TBI5011537). SAMEGRELO-ZEMO SVANETI: Abasha, Vedi, Khaishura river, *Quercus* forest, soil, 1600 m, 17.VIII.1976, Ts. Inashvili (TBI5016013). Mestia, Chuberi, Nenskra river, *Picea* forest, rotten logs, 1000 m, 27.VII.1976, Ts. Inashvili (TBI5002668). Mestia, Chuberi, Sgurishi, Nenskra river, forest, among mosses, 800 m, 22.VII.1976, Ts. Inashvili (TBI5002206, 5002682). Mestia, Chuberi, Tita, Nenskra river, forest edge, mosses, 1000 m (TBI5012281). Mestia, Chuberi, Tita, Nenskra river, Papalara, *Picea-Abies* forest, soil, 1000 m, 22.VII.1976, Ts. Inashvili (TBI5011563, TBI5013406). Mestia, Tita, Nenskra river, 1000 m, 22.VII.1976, Ts. Inashvili (TBI5003406). SAMTSKHE-JAVAKHETI: Borjomi, Bakuriani, Mitarba, at the Kokhta mt., 1916, N. Voronikhin (TBI5015395). Borjomi, Bakuriani, *Picea* forest, mossy rocks, 1916, Ts. Inashvili (TBI5015394).

***Cladonia fimbriata* (L.) Fr.**

ABKHAZIA: Gagra, forest, birch trunk, 1500 m, 15.VII.1962, Ts. Inashvili (TBI5011585). Gagra, Gagra Range, *Picea* forest, stub, 2250 m, 12.VII.1964, Ts. Inashvili (TBI5011588). Gagra, Gelgeluki, Gagra Range, *Picea-Fagus* forest, log, 1500 m, 15.VII.1967, Ts. Inashvili (TBI5003557). Gagra, Gyuzle, Gagra Range, pine-beech forest, birch trunk base, 2000 m, 12.VII.1962, Ts. Inashvili (TBI5013533). Gagra, humus soil, 15.VII.1962, Ts. Inashvili (TBI5002304). Gagra, Lidzava, Bichvinta-Miusera Strict Nature Reserve, forest edge, mosses, 100 m, 26.VI.1980, Ts. Inashvili (TBI5011604). Gagra, Lidzava, Bichvinta-Miusera Strict Nature Reserve, forest, rotten stub, 100 m, 28.VI.1980, Ts. Inashvili (TBI5011605). Gali, Sakeni river, conifer forest, rotten stub, 1950 m, 19.VII.1961, K. Kanchavelii (TBI5003094). Ibidem, *Picea-Abies* forest, soil, 1950 m, 13.VII.1961, I. Dylevskaya (TBI5002290). Ochamchire, Anaria, Bebesiri lake, moraines, soil, 23.VI.1958, Ts. Inashvili (TBI5002259). Sokhumi, Achavchara, Achavchara mt., mossy rocks, moraine, 2300 m,



- 21.VII.1912, G. Voronov (TBI5015515). Sokhumi, Bichvinta-Miusera reserve, 28.VI.1980, Ts. Inashvili (TBI5002329). Sokhumi, Bichvinta-Miusera reserve, *Rhododendron caucasicum* shrubs, soil, 2500 m, 26.VI.1980, Ts. Inashvili (TBI5002328). ADJARA: Khulo, Danisparauli, Goderdzi Pass, soil, 2000 m, 15.VII.1968, Ts. Inashvili (TBI5000497). GURIA: Ozurgeti, Ozurgeti (Makharadze), forest, among mosses, 05.VII.1959, I. Dylevskaya (TBI5011583). IM-ERETI: Baghdati, Zekari Pass, thinned forest, soil, 2100 m, 13.VII.1968, Ts. Inashvili (TBI5011596). Kharagauli, N slope, 700-750 m, 19.X.1937 (TBI5011568). Kharagauli, Partskhnali, forest, rotten oak stub, 19.X.1937, V. Pakhunova (TBI). Kharagauli, Partskhnali, Kokhori castle, rocks, 500 m, 18.X.1937, V. Pakhunova (TBI5011569). Kutaisi, Sairme, *Betula* forest, stub, 930 m, 05.X.1962, Ts. Inashvili (TBI5002303). Kutaisi, Sairme, Sairme resort, forest edge, soil, 930 m, 05.X.1962, Ts. Inashvili (TBI5011584). KAKHETI: Akhmeta, Jvarboseili, 12.VIII.2014, K. Batsatsashvili & A. Arabidze (TBI). Akhmeta, Omalo, forest, stub, 2000 m, 07.VIII.2014, K. Batsatsashvili & I. Kupradze (TBI). Akhmeta, Shenako, tragacanth community, mossy soil, 1960 m, 10.VIII.2014, K. Batsatsashvili & I. Kupradze (TBI). Sagarejo, *Fagus* forest, log, 1800 m, 04.VIII.1948 (TBI5002291). Sagarejo, Gombori, 1400 m, 05.VIII.1948, V. Pakhunova (TBI5011574). Sagarejo, Gombori, woodland, soil, 1250 m, 04.VIII.1948, V. Pakhunova (H, TBI5002244, TBI5011573). Sagarejo, Gomborula river, 24.VII.1948, V. Pakhunova (TBI5002243). Sagarejo, Kachreti, 05.VII.1950, A. Ghviniashvili (TBI5015448). Sagarejo, Lagodekhi, Lagodekhi reserve, Didi Kochalo mt., 1900m, 03.VII.1979, K. Tigishvili (TBI5011602). Ibidem, 31.VII.1979, K. Tigishvili (TBI5011603). Sagarejo, Lagodekhi, Lagodekhi reserve, Shromis-khevi river, 1284 m, 15.V.1979, K. Tigishvili (TBI5011601). Sagarejo, soil, 05.VIII.1948 (TBI5002293). KVEMO KARTLI: Tetrtskaro, Alekseevka, 2500 m, 23.VII.1966, Ts. Inashvili (H, TBI5008479). Tetrtskaro, Manglisi, *Picea-Betula* forest, mossy rocks, 1500 m, 18.XI.2014, K. Batsatsashvili & I. Kupradze (TBI). Tetrtsqaro, Mukhati, 10.VIII.1925, V. Pakhunova (TBI5011567). Tsalka, Neonkharabakhi, forest, 09.VIII.1969, Ts. Inashvili (TBI5011597). MTSKHETA-MTIANETI: Dusheti, Pshavi, Gometsari river, *Pinus-Picea* forest, stub, 18.VII.1960, Ts. Inashvili (TBI5002650). Dusheti, Barisakho, under shurb, 11.VIII.1959, Ts. Inashvili (TBI5002300). Dusheti, Batsaligo, rocks, 11.VIII.1959, Ts. Inashvili (TBI5011581). Dusheti, Chinti, 28.VII.1959, Ts. Inashvili (TBI5002655). Dusheti, Gudauri, Aragvi river, 1600 m, 28.X.1960, Ts. Inashvili (TBI5000493). Dusheti, Shatili, Pirikiti Khevsureti, soil, 17.VII.1959, Ts. Inashvili (TBI5011582). Kazbegi, Juta, Sadusteli, 2200 m, 26.VII.1950, K. Kimmeridze (TBI5011575). Kazbegi, Stepantsminda, Devdoraki, soil, 1950 m, 14.VII.1971, Ts. Inashvili (TBI5003095). Tianeti, Khevsurtsopeli, rotten tree, 23.VI.2014, K. Batsatsashvili & I. Kupradze (TBI). Dusheti, Pshav-Khevsureti Range, Kistani, Datvisjvari Pass, road Zhinvali-Barisakho-Shatili, 42°31'20"N, 45°03'22"E, pasture quartzite, 2670 m, 20.VIII.2015, T. Ahti, A.R. Burgaz, I. Kupradze & A. Jorjadze (MACB109392). Tianeti, Meliaskevi, road Tbilisi-Tianeti, 41°59'58"N, 44°56'21"E, *Pinus* plantation, 1080 m, 22.VIII.2015, T. Ahti, A.R. Burgaz, & K. Batsatsashvili (MACB109393). RACHA-LECHKHUMI - KVEMO SVANETI: Navlevi, *Picea* forest, stub, 1800 m, 27.VIII.1952, V. Pakhunova (TBI5011578). Ambrolauri, Kajiani, Lukhuni river, *Fagus-Picea* forest, soil, 14.VII.1982, Ts. Inashvili (TBI). Ambrolauri, Kajiani, rock cracks, 21.VIII.1951, V. Pakhunova (TBI5002246). Ambrolauri, Kajari, Lukhuni river, soil, 2000 m, 14.VII.1982, Ts. Inashvili (TBI5001650). Ambrolauri, Shaori reservoir, 1175 m, 21.VII.1965, Ts. Inashvili (TBI5002662). Ambrolauri, Uravi, 20.VIII.1951, V. Pakhunova (TBI). Lentekhi, Ashkhashura river, subalpine zone, mossy rocks, 06.VII.1978, L. Kukhaleishvili (TBI5000501). Lentekhi, Kheledula river, forest edge, soil, 1500 m, 12.VII.1979, Ts. Inashvili (TBI5002237). Lentekhi, Kheledula river, forest edge, soil, 1500 m, 12.VII.1979, Ts. Inashvili (TBI5002236). Lentekhi, Koruldashi, boulders at limestone rocks, 18.VII.1978, L. Kukhaleishvili (TBI5011600). Lentekhi, Moashi, 1963, Ts. Inashvili (TBI5011693). Oni, Ghebi, 06.VII.1967, Gagnidze et al. (TBI5011595). Oni, Glola, *Betula* forest, mossy soil, 1800 m, 18.VII.1963, Ts. Inashvili (TBI5002305). Oni, Glola, *Quercus* forest, 1500 m, 18.VII.1963, Ts. Inashvili (TBI5011587). Oni, Glola, *Quercus* forest, rotten stub, 1500 m, 19.VII.1963, Ts. Inashvili (TBI5011586). Oni, *Picea-Abies* forest, among mosses, 1800 m, 18.VII.1963, Ts. Inashvili (TBI5002307). Oni, Shovi, Mamisoni Pass, on a stone with soil layer, 2600 m, 17.VIII.1965, Ts. Inashvili (TBI5016025). Ibidem, *Juniperus* shrub, soil, 2800 m, 04.IX.1950, V. Pakhunova (TBI5011577). Tsageri, Khvamli mt., *Picea-Fagus* forest, rotten stub, 1500-1600 m, 22.

VIII.1966, Ts. Inashvili (TBI). SAMEGRELO-ZEMO SVANETI: Martvili, Zugdidi, Otupure, Okhachkue massif, *Picea* forest, soil, 1650 m, 12.VII.1964, K. Kanchaveli (TBI5016017). Ibidem, *Picea* forest, soil, 12.VII.1964, Ts. Inashvili (TBI). Mestia, Becho, Dolra river sources, steppe, soil, 2000 m, 31.VII.1976, Ts. Inashvili (TBI5000500). Mestia, Becho, Guli glacier, mossy rocks, 2200 m, 28.VII.1976, Ts. Inashvili (TBI5011598). Mestia, Betkili, *Picea-Abies* forest, stub, 1500 m, 17.VII.2014, K. Batsatsashvili & I. Kupradze (TBI). Mestia, Chuberi, Nenskra river, 800 m, 20.VII.1976, Ts. Inashvili (TBI5008482). Mestia, Guli, Dolra river, moraines, 1950 m, 28.VII.1976, Ts. Inashvili (TBI5002321). Mestia, Guli, Dolra river, soil, 2000 m, 28.VII.1976, Ts. Inashvili (TBI5000499). Mestia, Lasdili, Zagaro Pass, deep moist moraine, 2500 m, 03.VIII.1963, Ts. Inashvili (TBI5000494). Mestia, Lenjeri, 1600 m, 28.VII.1975, Ts. Inashvili (TBI5011533). Mestia, Mazeri, Dolra river, *Fagus* forest, 1900 m, 25.VII.1976, Ts. Inashvili (TBI5011504). Ibidem, soil, 1850 m, 25.VII.1976, Ts. Inashvili (TBI5008474). Mestia, Mazeri, Shkhara, Dolra river, *Festuca* community, soil, 1800 m, 24.VII.1976, Ts. Inashvili (TBI5008480). Mestia, Mazeri, Ushba mt. base, *Pinus* forest, 18.VII.2014, K. Batsatsashvili & I. Kupradze (TBI). Mestia, N slope, pine forest, stub, 1600 m, 02.VII.1975, Ts. Inashvili (TBI5011694). Mestia, Nakra river sources, spruce-chestnut forest, lower part chestnut trunk, 31.VIII.1947, Ts. Inashvili (TBI5002289). Mestia, Nakra river sources, 1550 m, 03.VIII.1976, Ts. Inashvili (TBI5002234). Mestia, Ushguli, Ushguli-Kala, soil, 1800 m, 21.VII.1963, Ts. Inashvili (TBI5011693). SAMTSKHE-JAVAKHETI: Adigeni, Zekari Pass, 2100 m, 13.VII.1968, Ts. Inashvili (TBI5000498). Akhaltsikhe, Kodiana, *Alnus* forest, soil, 1800 m, 06.VI.1916, V. Kozlovsky (TBI5015525). Borjomi, Bakuriani Range, 1750 m, 15.VIII.1967, A. Dolukhanov (TBI5011532). Borjomi, Bakuriani, moraines, 2600-2700 m, 09.VIII.1931, V. Pakhunova (TBI5002242). Ibidem, open area, soil, 19.V.1916, V. Kozlovsky (TBI5011566). Ibidem, Patara Mitarbi, mixed forest, 24.VII.1920, N. Voronikhin (TBI5002239). Borjomi, Bakuriani, *Rhododendron caucasicum* shrubs, soil, 11.VIII.1928, V. Kozlovsky (TBI). Borjomi, Kvabiskhevi, *Alnus incana* forest, 1986, Ts. Inashvili (TBI5015334). Borjomi, Likani, forest, rotten stub, 1800 m, 09.IX.1987, Ts. Inashvili (TBI5011564). Borjomi, Likani, 03.VI.1986, Ts.

Inashvili (TBI5003097). Borjomi, Tavkvetili mt., N slope, *Pinus-Quercus* forest, mossy rocks, 18.VIII.1967, N. Chelidze (TBI5011591). SHIDA KARTLI: Akhalgori, Kartli, Okhiri gorge, soil, 2700-2800 m, 14.VIII.1983, Ts. Inashvili (TBI5002333). Akhalgori, Ksani river, Okhiri river, rocks, 1700 m, 14.VIII.1983, Ts. Inashvili (TBI). Akhalgori, Largvisi, Ksani river, pine forest, limestone massives, 1000 m, 18.VIII.1963, Ts. Inashvili (TBI5002654). Akhalgori, Largvisi, soil, 1150 m, 16.VIII.1983, Ts. Inashvili (TBI5003096). Akhalgori, Okhiri, *Picea-Abies* forest, 1700 m, 14.VIII.1983, Ts. Inashvili (TBI5002653). Akhalgori, Okhiri, soil, 1700 m, 14.VIII.1983, Ts. Inashvili (TBI5011607). Gori, Boshuri, Tana river, 04.VI.1967, Ts. Inashvili (TBI). Gori, Gori, *Pinus* forest, mossy soil, 29.X.1922, E. Kikodze & V. Shishkin (TBI5002240). Kareli, Dzama river, *Fagus-Picea* forest, stub, 2300 m, 15.VII.1967, Ts. Inashvili (TBI5011592). Ibidem, mossy rocks, 2300 m, 15.VII.1967, Ts. Inashvili (TBI5011594). Kareli, Alistsikhe, Dzama river, *Carpinus betulus* forest, stub, 15.VII.1967, Ts. Inashvili (TBI5002317). Ibidem, *Fagus-Carpinus betulus* forest, 2300 m, 15.VII.1967, Ts. Inashvili (TBI5000496). Sokhumi Java, Chikhanturi wood, 27.VII.1959, K. Kanchaveli (TBI5002299, 5002298, 5011580). Java, Edisa, Ermani, Didi Liakhvi river, open area, soil, 2440 m, 22.VIII.1968, A. Dolukhanov (TBI5016072). Java, *Fagus-Abies* forest, stub, 1600 m, 10.VII.1981, Ts. Inashvili (TBI5002651). Java, Java resort, above 1800 m, 31.VIII.1947, V. Pakhunova (TBI5011571). Ibidem, *Juniperus* shrubs, soil, 1600 m, 10.VII.1981, Ts. Inashvili (TBI5002652). Java, Khtse, 09.VII.1981, Ts. Inashvili (TBI5011606). Java, Kurta, Liakhvi river, at mountain top, *Fagus-Carpinus* forest, soil, 2750 m, 28.VIII.1947, V. Pakhunova (TBI). Ibidem, soil, 27.VIII.1947, V. Pakhunova (TBI5011572). Java, soil, 2000 m, 09.VII.1981, Ts. Inashvili (TBI5002331, TBI5002320).

### *Cladonia floerkeana* (Fr.) Flörke

ADJARA: Kobuleti, Tsikhisdziri, 27.VIII.1927, V. Pakhunova (TBI). IMERETI: Tkibuli, 24.IX.1949, Ts. Inashvili (TBI5002375). Tkibuli, soil, 24.IX.1949, Ts. Inashvili (TBI5016037). RACHA-LECHKHUMI - KVEMO SVANETI: Oni, Glola, 19.VII.1963, Ts. Inashvili (TBI5016038). SAMEGRELO-ZEMO SVANETI: Mestia, Nakra river sources, scree, 1700 m, 31.VIII.1947, Ts. Inashvili (TBI5002289). Mestia, Nakra river

sources, forest edge, mosses, 03.VIII.1976, Ts. Inashvili (TBI5002695).

***Cladonia foliacea* (Huds.) Willd.**

ABKHAZIA: Gagra, Iupshara, Gega river, mossy rocks, moraines, 600 m, 14.VI.1979, A. Dolukhanov (H, TBI). KAKHETI: Akhmeta, Omalo, 08.VIII.2014, K. Batsatsashvili & I. Kupradze (TBI). Akhmeta, Shenako, 10.VIII.2014, K. Batsatsashvili & A. Arabidze (TBI). Dedoplistskaro, Kumroskhevi, Vashlovani Nature Reserve, subalpine open woodland, mossy rocks, 350 m, 16.IV.1988, Ts. Inashvili (TBI5008478). Dedoplistskaro, Shiraki, Datvis-khevi, Vashlovani Nature Reserve, *Pistacia* open woodland, soil, 350 m, 10.IX.1968, N. Chelidze (TBI5014043). Dedoplistskaro, Shiraki, Shiraki plateau, *Pistacia* open woodland, soil, 08.XII.1952, M. Sakhokia (TBI5011543). Dedoplistskaro, Shiraki, Vashlovani Nature Reserve, soil, 350 m, 20.XI.1964, N. Chelidze (TBI5015382). Ibidem, 03.X.1989, Ts. Inashvili (TBI5002929). Ibidem, *Pistacia* open woodland with *Stipa* spp., soil, 350 m, IX.1996, Ts. Inashvili (TBI5002673). Ibidem, 14.VIII.1988, Ts. Inashvili (TBI5008477). Ibidem, rocks, 350 m, 06.X.2016, N. Lachashvili (TBI). Ibidem, 10.III.1955, P.M. Sukhmarov (TBI5015379). Ibidem, 05.XI.1970, M. Jokhadze (TBI5015384). Ibidem, 15.IV.1988, Ts. Inashvili (TBI5002214). Ibidem, soil, 350 m, 27.IX.1962, M. Sokhadze (TBI5002672). Ibidem, *Pistacia* open woodland, soil, 350 m, 09.X.1961, Z. Keadze (TBI5002700). Sagarejo, Arkhatani, *Quercus-Carpinus betulus* forest, *Carpinus* base, 1000 m, 01.IV.1948, M. Gurgenidze (TBI5002209). Sagarejo, Natismtsemeli, *Pistacia* open woodland, soil, 20.I.1947, M. Gurgenidze (TBI5002208). Sagarejo, Udabno, Soviet farm, 760 m, 01.XII.1947, M. Gurgenidze (TBI5011542). KVEMO KARTLI: Bolnisi, 18.IV.1961, N. Chelidze (TBI5011545). Bolnisi, Poladauri, forest edge, mosses, 06.VII.1966, Ts. Inashvili (TBI5011551). Bolnisi, soil, among mosses, 21.VI.1963, N. Chelidze (TBI5011547). Tetrtskaro, Iraga, 14.XI.2014, K. Batsatsashvili & I. Kupradze (TBI). Tetrtskaro, Manglisi, *Betula* forest, soil, 18.VIII.1916, N. Nikolaev (TBI5002216). Ibidem, *Picea-Abies* forest, soil, 25.V.2003, A. Jorjadze (TBI5002674). Tsalka, Ar-Sarvan, Ag-Dag mt., forest edge, stub, 2200 m, 11.IX.1948, G. Zamtaradze (TBI5002210). MTSKHETA-MTIANETI:

Dusheti, Abudelaury lakes, soil, 2600 m, 14.XI.1929, A. Kolakowski (TBI5015481). Dusheti, *Pinus* forest, stub, 02.IX.1961, Ts. Inashvili (TBI5002671). Dusheti, Shatili, forest, 17.VIII.1959, Ts. Inashvili (TBI5011544). Kazbegi, Kuro mt., soil, 1900 m, 30.VII.1971, Ts. Inashvili (TBI5002222). Kazbegi, Stepantsminda, Devdoraki, 1900 m, VIII.1985, M. Ivanishvili (TBI5011554). Ibidem, soil, 1900 m, 14.VII.1971, Ts. Inashvili (TBI5011553). Mtskheta, 22.VI.1963, Ts. Inashvili (TBI5008475). Mtskheta, *Pinus* forest, soil, 1284 m, 26.IV.2004, D. Atha et al. (TBI5002215). Mtskheta, Saguramo Range, *Stipetum*, soil, 12.VII.1969, Ts. Inashvili (TBI5016099). Mtskheta, Saguramo, Saguramo Range, oak rotten stub, 18.VII.1959, Ts. Inashvili (TBI5002670). SAMTSKHE-JAVAKHETI: Akhaltsikhe, Ghreli, Ghreli-Sapara monastery, *Pinus* forest, soil, 1050 m, 14.VII.1968, Ts. Inashvili (TBI5002212). Borjomi, Kvabiskhevi, soil, 2600 m, 09.VIII.1986, Ts. Inashvili (TBI5002213). SHIDA KARTLI: Gori, Ateni river, 1923, E. Kikadze (TBI5011610). Gori, open area, soil, 28.III.1916, V. Kozlovsky (TBI5015476). Kareli, Akhaltsikhe, Giorgitsminda, soil, 12.VII.1968, Ts. Inashvili (TBI5011552). Kaspi, Ertatsminda, *Fagus* forest, 23.V.1967, N. Chelidze (TBI5013538). TBILISI, *Buxus-Carpinus* community, stub, 13.XII.1915, N. Voronikhin (TBI5015475). Ploskaia mt., 04.VII.1918, G. Spagorov (TBI5015479). Tbilisi, meadow, soil, 725 m, 27.I.1908, D. Pagirev (TBI5015470). Tbilisi, funicular platform, meadow, soil, 750 m, 20.IX.1964, N. Chelidze (TBI5014041, TBI5014042, TBI5015381). Tbilisi, Tbilisi Botanical Garden, 725 m, 25.V.1965, N. Chelidze (TBI5013527). Ibidem, mossy rocks, 725 m, 27.V.2009, N. Lachashvili (TBI). Ibidem, fallen branches, 725 m, 13.III.1963, N. Chelidze (TBI5011546). Ibidem, soil, 725 m, 25.VI.1965, N. Chelidze (TBI5008476). Ibidem, mossy rocks, 725 m, 22.IV.1920, V. Pakhunova (TBI5002219). Ibidem, soil, 725 m, 27.IV.1910, G. Voronov (TBI5002218). Ibidem, SW slope, 725 m, 27.IV.1910, G. Voronov (TBI5002217). Tbilisi, Tsavkiskhevi river, soil, 24.VI.1965, N. Chelidze (TBI5011550). Tbilisi, Kus-tba [Turtle lake], 670 m, 20.IX.1964, N. Chelidze (TBI5014040). Ibidem, 670 m, 04.III.1963, A. Kutateladze et al. (TBI5002221). Ibidem, Mama Daviti mt., 800 m, 25.VII.1952, G. Zamtaradze (TBI5002211). Teleti Range,



soil, 24.IX.1962, N. Chelidze (TBI5014038). Teleti Range, soil, 06.V.1961, N. Chelidze (TBI5013526). Teleti Range, soil, 21.III.1964, N. Chelidze (TBI5011548). Tsavkiskhevi, *Buxus* shrub, 24.IV.1965, N. Chelidze (TBI5011549). Udzo mt., 11.VII.1963, N. Chelidze (TBI5014039). Ibidem, monastery, 1100 m, 04.IV.1963, A. Kutateladze (TBI5015482). Vashlovani Reserve, Lisi lake, beech-spruce forest, rotten tree, 980 m, 18.VI.2010, N. Lachashvili (TBI).

***Cladonia furcata* (Huds.) Schrad.**

ABKHAZIA: Gagra, Akvara, Ritsa lake, 1000 m, 29.VII.1912, G. Voronov (TBI5011613). Gagra, Akvara, Ritsa lake, Gega river, Bzipi forest, 1000 m, 16.VII.1925, A. Dolukhanov (TBI5011625). Ibidem, soil, 1000 m, 16.XI.1934, A. Dolukhanov (TBI5011624). Ochamchire, IX.1915, A. Buachidze (TBI5015569). Ibidem, Anaria, Bebesiri lake, 23.VI.1958, Ts. Inashvili (TBI5002661). Ibidem, Sakeni river, upper flow, meadow, soil, 1550 m, 20.VII.1961, I. Dylevskaya (TBI5003079). Sokhumi, Achavchara, 21.VII.1912, G. Voronov (TBI5002193). Ibidem, soil, 2400 m, 02.VII.1912, G. Voronov (TBI5011612). ADJARA: Keda, Zendidi, Zendidi-Agara, Adjaristkali river, *Carpinus betulus* forest, mossy rocks, 02.VII.1910, G. Voronov, 20. Khulo, Darchidzeebi, shaded *Picea* forest, on soil, 27.VII.1954, A. Dmitrieva (TBI5008517). Kobuleti, Chakvistavi, Chakvi river, 10. IX.1977, Ts. Inashvili (TBI5016044). Kobuleti, Kintishi Nature Reserve, *Picea-Fagus* forest, rotten stub, 300 m, 09.IX.1977, Ts. Inashvili (TBI5013553). GURIA: Chokhatauri, Bakhmaro, limestone, soil, 2000 m, 21.VIII.1964, Ts. Inashvili (TBI5014048, TBI5013548). Ibidem, *Quercus-Carpinus betulus* forest, mossy soil, 2000 m, 21.VIII.1964, Ts. Inashvili (TBI5013547). IMERETI: Kutaisi, Baghdati, Baghdati, 21.VIII.1977, Ts. Inashvili (TBI5015496). Kutaisi, Baghdati, Baghdati, *Betula* forest, soil, 2000 m, 21.VIII.1977, Ts. Inashvili (TBI5015497). Sachkhere, *Fagus-Carpinus* forest, soil, 24.VII.1965, Ts. Inashvili (TBI5016055). Tkibuli, Nakerala mt., pine forest, stub, 21.VII.1928, L. Kemularia-Nata-dze (TBI5003085). KAKHETI: Dedoplistskaro, Datvis-khevi, Vashlovani Nature Reserve, 350 m, 22.XI.1964, N. Chelidze (TBI5013571). Dedoplistskaro, Shiraki, Darikala, Vashlovani Nature Reserve, pistachio-tree open woodland,

soil, 350 m, 30.IV.1968, Ts. Inashvili (TBI5015495). Dedoplistskaro, Shiraki, soil, 01.III.1962, Ts. Inashvili (TBI5015486). Dedoplistskaro, Shiraki, Vashlovani Nature Reserve, 350 m, 01.XII.1962, Z. Keadze (TBI5011740). Ibidem, *Pistacia* open woodland, soil, 350 m, 14.IV.1988, Ts. Inashvili (TBI5008484). Ibidem, soil, 350 m, 05.VIII.1989, Ts. Inashvili (TBI5002932). Ibidem, juniper shrubs, 350 m, 16.VI.1961, Z. Keadze (TBI5003080). Ibidem, soil, 350 m, 27.IX.1962, M. Sokhadze (TBI5003076). Ibidem, juniper shrubs, among mosses, 350 m, 15.VI.1961, Z. Keadze (TBI5003081). Sagarejo, Gombori, among mosses 06.VIII.1948, V. Pakhunova (TBI5011628). Ibidem, 1325 m, 26.VII.1948, V. Pakhunova (TBI5011629). Lagodekhi, Lagodekhi reserve, *Fagus* forest, mosses, 2000 m, 20.XI.1964, N. Chelidze (TBI5013171). Ibidem, Shromis-khevi river, 1284 m, 15.V.1979, K. Tigishvili (TBI5016487). Telavi, 15.IX.1917, N. Pastukhov (TBI5015485). Ibidem, *Juniperus* shrub, soil, 16.IX.1916, N. Pastukhov (TBI5015574). Ibidem, soil, 20.IX.1917, N. Pastukhov (TBI5015575). KVEMO KARTLI: Bolnisi, *Pinus* forest, 1000 m, 18.IV.1961, N. Chelidze (TBI5011638). Ibidem, *Quercus-Carpinus betulus* and *Paliurus* forest, open woodland, soil, 16.IV.1961, N. Chelidze (TBI5011640). Bolnisi, Poladauri, forest, log, 06.XII.1966, Ts. Inashvili (TBI5016483). Tetrtskaro, Alekseevka, tragacanth community, soil, 31.IV.1966, Ts. Inashvili (TBI5002657). Tetrtskaro, Bediani, soil, 07.IX.2006, A. Jorjadze (TBI5002686, TBI5002660). Tetrtskaro, Iraga, *Pinus-Castanea* forest, mossy rocks, 14.XI.2014, K. Batsatsashvili & I. Kupradze (TBI). Tetrtskaro, Khrami, *Picea-Pinus* forest, soil, 11.VIII.1966, Ts. Inashvili (TBI5000482). Tetrtskaro, Manglisi, forest, 03.VII.1909, N. Nikolaev (TBI5002188). Tsalka, Neonkharabakhi, 09.VIII.1969, Ts. Inashvili & N. Chelidze (TBI5011652, TBI5011742). MTSKHETA-MTIANETI: Dusheti, Aragvi river, 1300 m, 29.X.1960, Ts. Inashvili (TBI5016092). Dusheti, Barisakho, 1450 m, 23.VII.1959, Ts. Inashvili (TBI5016109). Dusheti, Batsaligo, log, 11.VIII.1959, Ts. Inashvili (TBI5011636). Dusheti, Chikaani, 1300 m, 29.X.1960, Ts. Inashvili (TBI5016096). Dusheti, Dzebotkari, Dzebotkari-Manasuri, 1300 m, 29.X.1960, Ts. Inashvili (TBI5016093, TBI5016094). Dusheti, Gudauri, Aragvi river sources, scree, among

mosses, 1600 m, 28.X.1960, Ts. Inashvili (TBI5011637). Dusheti, Guli, Aragvi river, 08.VIII.1959, Ts. Inashvili (TBI5016482). Dusheti, Guro, rocks, 11.VII.1959, Ts. Inashvili (TBI5016088). Dusheti, Guro, rocks, 14.VIII.1959, Ts. Inashvili (TBI5016091). Dusheti, Kistani, road Zhinvali-Barisakho-Shatili, Arguni, bank river, 42°35'20"N 45°05'46"E, vertical slates, 2000 m, 20.VIII.2015, T. Ahti, A.R. Burgaz, I. Kupradze & A. Jorjadze (MACB109395). Dusheti, Makarta, Aragvi river, subalpine meadows, 20.X.1960, Ts. Inashvili (TBI5016095). Dusheti, Naghvarevi, *Picea-Pinus* forest, soil, 01.VIII.1916, N. Voronikhin (TBI5011617). Dusheti, Pshav-Khevsureti Range, Maghrani, road Zhinvali-Barisakho-Shatili, Aragvi, river bank, 42°25'55"N, 44°56'42"E, close to *Fagus orientalis* forest, slates, 1200 m, 20.VIII.2015, T. Ahti, A.R. Burgaz, I. Kupradze & A. Jorjadze (MACB109394). Dusheti, Shatili, 17.VII.1959, Ts. Inashvili (TBI5011738, TBI5011673). Ibidem, forest, 1250 m, VII.1985, Ts. Inashvili (TBI5016489). Ibidem, *Picea-Populus* forest, mossy soil, 1600 m, 17.VIII.1959, Ts. Inashvili (TBI5011634). Dusheti, Ukankhadu, mossy soil, 1000 m, 12.VII.1959, Ts. Inashvili (TBI5016089). Kazbegi, Juta, Sadzrokha, 2500 m, 09.IX.1953, K. Kimeridze (TBI5011632, TBI5011633). Kazbegi, Stepantsminda, Devdoraki, soil, 1900 m, 14.VII.1971, Ts. Inashvili (TBI5002656). Mtskheta, Saguramo Range, forest edge, soil, 1100 m, 23.XI.1963, Ts. Inashvili (TBI5011645). Ibidem, *Spiraea* shrubs, soil, 12.VII.1969, Ts. Inashvili (TBI5016099). Mtskheta, Zedazeni, Saguramo Range, 06.III.1962, Ts. Inashvili (TBI5016097). Ibidem, *Pinus* forest, stub, 1700 m, 06.III.1962, Ts. Inashvili (TBI5016098). Java, 03.IX.1947, V. Pakhunova (TBI5002190). Java, beech-fir forest, stub, 1600 m, 10.VII.1981, Ts. Inashvili (TBI5002659). Java, Edisa, Ermani, Didilakhvi river, 2440 m, 26.VII.1973, Ts. Inashvili (TBI5011658). Java, Edisa-Sgubiri, soil, 1750 m, 03.VIII.1973, Ts. Inashvili (TBI5002177). Java, Kvemo Roki, *Pinus* forest, rotten log, 1300 m, 08.VIII.1981, Ts. Inashvili (TBI5016100). RACHA-LECHKHUMI - KVEMO SVANETI: Ambrolauri, Kajiani, Lukhuni river, *Fagus-Abies* forest, beech stub, 1050 m, 14.VII.1982, Ts. Inashvili (TBI5011668). Ibidem, *Picea-Fagus* forest, soil, 2000 m, 14.VII.1982, Ts. Inashvili (TBI5003086). Ambrolauri, Khidikari, mossy

rocks, 09.IX.1964, Ts. Inashvili (TBI5013546). Ibidem, pasture field, soil, 09.IX.1964, Ts. Inashvili (TBI5015490). Ibidem, glacier moraines, 09.IX.1964, Ts. Inashvili (TBI5015489). Ambrolauri, Khikha mt., Krikhula river, *Picea-Abies* forest, stub, 2000 m, 18.VIII.1982, Ts. Inashvili (TBI5011667). Ambrolauri, glacier moraines, 2000 m, 10.VII.1982, Ts. Inashvili (TBI5011666). Ambrolauri, Velevi, Satsalike mt., *Picea-Pinus* forest, stub, 2000 m, 23.VII.1982, Ts. Inashvili (TBI5011745). Lentekhi, Kheledula river, birch forest edge, soil, 1450 m, 19.VII.1979, Ts. Inashvili (TBI5003077). Ibidem, *Picea-Pinus* forest, soil, 1500 m, 12.VII.1979, Ts. Inashvili (TBI5012916). Lentekhi, Koruldashi, Koruldashi glazier, *Picea* forest and *R. luteum*, mosses, 2400 m, 05.VIII.1963, Ts. Inashvili (TBI5013542). Ibidem, soil, 2400 m, 01.VIII.1963, Ts. Inashvili (TBI5011647). Lentekhi, Lakhashura-Devashi river sources, boulders-soil, 2400 m, 03.VIII.1979, D. Mtskhvetadze (TBI5013554). Lentekhi, Laskadura river, forest edge, soil, 900 m, 20.VII.1979, Ts. Inashvili (TBI5015498). Ibidem, *Rhododendron caucasicum* shrubs, soil, 800 m, 20.VII.1979, Ts. Inashvili (TBI5016045, TBI5015499). Lentekhi, Moashi, forest, mossy rocks, 21.VII.1963, Ts. Inashvili (TBI5016042). Lentekhi, Sasashi, soil, 1800 m, 26.VII.1963, Ts. Inashvili (TBI5013541). Oni, 03.IX.1964, Ts. Inashvili (TBI5015488). Oni, Chala, soil, 12.IX.1964, Ts. Inashvili (TBI5015492). Oni, Glola, beech trunk, 1500 m, 19.VII.1963, Ts. Inashvili (TBI5016040). Ibidem, forest edge, stub, 1500 m, 18.VII.1963, Ts. Inashvili (TBI5016039). Ibidem, forest, soil, 1200 m, 16.VII.1963, Ts. Inashvili (TBI5013540). Ibidem, on rock and thin soil cover in birch forest, 1500 m, 13.VIII.1963, Ts. Inashvili (TBI5016041). Ibidem, subalpine meadows, 1500 m, 19.VII.1963, Ts. Inashvili (TBI5011648). Oni, Ghebi, Shoda-Kedela, *Fagus* forest, rotten log, 1700 m, 19.VIII.1965, Ts. Inashvili (TBI5015493). Oni, Shovi, 1640 m, 21.VIII.1950, V. Pakhunova (TBI5002183). Ibidem, Mamisoni Pass, 2600 m, 02.VII.1958, L. Kemularia-Natadze & L. Khintibidze (TBI5002175). Ibidem, *Pinus* forest, pine base, 1620 m, 08.IX.1950, V. Pakhunova (TBI5011631). Ibidem, meadow, soil, 1550 m, 10.IX.1964, Ts. Inashvili (TBI5015491). Ibidem, soil, 1640 m, 21.VIII.1950, V. Pakhunova (TBI5011630). Oni, Soglolo, 16.VII.1963, Ts. Inashvili (TBI5011641). Oni, Sori, 29.

VIII.1964, Ts. Inashvili (TBI5011649). Tsageri, Akhalchala, soil, 1800 m, 26.VII.1980, Ts. Inashvili (TBI5003105). Tsageri, Nakuraleshi, 1000 m, 22.VIII.1966, Ts. Inashvili (TBI5011653). Tsageri, Tsageri, Tsikuri massif, soil, 2000 m, 25.VII.1980, Ts. Inashvili (TBI5003078). Ibidem, Jonoula river sources, on decaying fallen branches in alder forest, 1700 m, 25.VII.1980, Ts. Inashvili (TBI5013555). SAMEGRELO-ZEMO SVANETI: Abasha, Vedi, Khaishura river, 1600 m, 17.VIII.1976, Ts. Inashvili (TBI5013551, TBI5011744). Khobi, Poti, birch log, 1950 m, 01.IX.1923, B. Shishkin (TBI5013001). Martvili, Okhachkue massif, rotten log, 1850 m, 1960, M. Sokhadze (TBI5011639). Martvili, Zugdidi, Otipure, Okhachkue massif, rotten log, 1200 m, 15.VII.1964, Ts. Inashvili (TBI5002197). Mestia, Adishi glacier, *Betula* forest, rocks and soil, 2650 m, 22.VI.1977, G. Kikava (TBI5013552). Mestia, Becho, Guli glazier, *Picea-Pinus* forest, soil, 16.VIII.1943, Ts. Inashvili (TBI5016043). Mestia, boulders, 1600 m, 02.VII.1975, Ts. Inashvili (TBI5011661). Mestia, Chuberi, Nenskra river, 1900 m, 06.IX.1963, G. Zamtaradze (TBI5002191). Ibidem, *Betula* forest, soil, 1900 m, 06.IX.1963, Ts. Inashvili (TBI5003092). Ibidem, *Betula* forest, soil, 850 m, 20.VII.1976, Ts. Inashvili (TBI5002185). Ibidem, Sgurishi, Nenskra river, soil, 800 m, 22.VII.1976, Ts. Inashvili (TBI5013550). Ibidem, Tita, Nenskra river, *Picea-Abies* forest, stub, 1000 m, 22.VII.1976, Ts. Inashvili (TBI5002187). Mestia, Enguri river, forest edge, soil, 1600 m, 28.VII.1975, Ts. Inashvili (TBI5011659). Mestia, Khaishi, Larekvakva, *Picea-Abies* forest, log, 1500 m, 16.VIII.1976, Ts. Inashvili (TBI5014053). Mestia, Mestia, Mestia-Mulakhi, forest edge, soil, 1600 m, 01.VII.1975, Ts. Inashvili (TBI5011660). Mestia, Mestia, *Picea-Abies* forest, mossy rocks, 1600 m, 28.VII.1975, Ts. Inashvili (TBI5014057). Ibidem, *Quercus-Carpinus betulus* forest, mossy rocks, 1600 m, 02.VII.1975, Ts. Inashvili (TBI5011743). Mestia, Nakra river sources, on a pine rotten stub, 1550 m, 03.VIII.1976, Ts. Inashvili (TBI5003082). Ibidem, shrubs, soil, 1700 m, 03.VIII.1976, Ts. Inashvili (TBI5008483). Mestia, Tvebishi, Dolra river, 2000 m, 27.VII.1976, Ts. Inashvili (TBI5002186). Mestia, Ughviri Pass, 10.VIII.1963, Ts. Inashvili (TBI5011643). Mestia, Ushguli, Lekhziri glacier, 2000 m, 20.VIII.1963, Ts. Inashvili (TBI5013544). Ibi-

dem, soil, 2000 m, 20.VIII.1963, Ts. Inashvili (TBI5011646, TBI5013543). Ibidem, 26.VIII.1963, Ts. Inashvili (TBI5013545). Mestia, Ushguli, Tamaris Tsikhe, old *Eucalyptus*, 2200 m, 04.VIII.1963, Ts. Inashvili (TBI5015487). Senaki, forest-shrub land, IX.1915, A. Buachidze (TBI5015567). SAMT-SKHE-JAVAKHETI, mossy rocks (limestone), 12.VIII.1938, Sh. Nakhutsrishvili (TBI5011626). Akhaltsikhe, Ghreli, Ghreli-Sapara monastery, 1050 m, 14.VII.1968, Ts. Inashvili (TBI5013572, TBI5015585). Ibidem, Sapara monastery, *Pinus* forest, 1300 m, 11.VII.1968, Ts. Inashvili (TBI5008638). Borjomi, Akhaldaba, *Juglans-Castanea sativa*, mossy rocks, 24.VII.1933, I. Tumajarov (TBI5011623). Borjomi, Bakuriani Range, 1700 m, 07.VIII.1967, Ts. Inashvili (TBI5011655). Ibidem, oak forest, 1700 m, 07.VIII.1967, Ts. Inashvili (TBI5011654). Borjomi, Bakuriani, Kokhta mt., *Picea* forest, among mosses, 1700 m, 19.VIII.1925, V. Pakhunova (TBI5002182). Ibidem, Mukheri, rocks and soil, 1200 m, 17.V.1917, V. Kozlovsky (TBI5011621). Ibidem, Sakochao, Borjomistskali river, forest, fallen branches, 1600 m, 09.VII.1916, N. Voronikhin (TBI5015392). Ibidem, *Picea-Abies* forest, rotten tree, 15.V.1916, V. Kozlovsky (TBI5011619). Ibidem, *Picea-Fagus* forest, soil, 15.V.1916, V. Kozlovsky (TBI5002179). Borjomi, Bakuriani, soil, 27.VII.1923, V. Kozlovsky (TBI5002181). Borjomi, Bakuriani, Tskhratskaro mt., 01.VII.1916, I. Lepchenko (TBI5011615). Ibidem, *Carpinus orientalis* shrub, soil, VIII.1975, Ts. Inashvili (TBI5011670). Ibidem, top, among stones, 03.VII.1916, N. Voronikhin (TBI5011616). Borjomi, Borjomi park, Vorontsov plateau, 26.VI.1916, N. Voronikhin (TBI5011620). Borjomi, Borjomula river, *Pinus* forest plantation, soil, 1912, P. Vinogradov-Nikitin (TBI5002189). Borjomi, 1912, P. Vinogradov-Nikitin (TBI5002196). Borjomi, Dabadzveli, soil, 1900 m, 09.IX.1985, Ts. Inashvili (TBI5003083). Borjomi, eutrophic peat bogs, 1912, P. Vinogradov-Nikitin (TBI5002194). Borjomi, Likani, 750 m, 25.VIII.1985, Ts. Inashvili (TBI5011669). Borjomi, Likani, forest, among mosses, 750 m, 25.VIII.1985, Ts. Inashvili (TBI5003084). Borjomi, *Quercus* forest, soil, 20.V.1912, P. Vinogradov-Nikitin (TBI5002195). Ibidem, *Rhododendron caucasicum* shrubs, soil, 1912, P. Vinogradov-Nikitin (TBI5002199). Borjomi, Tavkvetili mt., N



slope, *Carpinus orientalis* shrub, soil, 18.VIII.1967, N. Chelidze (TBI5011591, 5002313). SHIDA KARTLI: Akhlagori, Churta, *Picea-Abies* forest, stub, 1400 m, 20.VIII.1983, Ts. Inashvili (TBI5011664). Ibidem, Largvisi, Ksani river, soil, 1200 m, 30.VII.1980, Ts. Inashvili (TBI5015500). Ibidem, Tskhradzmula river, *Pinus-Abies* forest, wood, 1600 m, 19.VIII.1983, Ts. Inashvili (TBI5011665). Gori, Boshuri, Tana river, 1400 m, 04.VI.1967, Ts. Inashvili (TBI5002192, TBI5003407). Ibidem, NW slope, 1400 m, 17.VII.1967, Ts. Inashvili (TBI5011656). Ibidem, pine trunk base, 1400 m, 04.VI.1967, Ts. Inashvili (TBI5002184). Gori, Gori, Ateni river, *Betula* forest, soil, 1923, E. Kikodze (TBI5015578). Gori, Tana river, *Spiraea* shrubs, soil, 31.VIII.1922, E. Kikodze (TBI5002180). Kareli, Akhaltsikhe, 2300 m, 15.VII.1967, Ts. Inashvili (TBI5002658). Kareli, Akhaltsikhe, Giorgitsminda, soil, 12.VII.1968, Ts. Inashvili (TBI5011657). Kareli, Tkemlovani, Dzama river, 2300 m, 13.VII.1967, Ts. Inashvili (TBI5002198). Kaspi, Ertatsminda, 26.V.1967, Ts. Inashvili (TBI5012915). TBILISI: Kojori, Koroghli, pasture field, soil, 700-750 m, 27.IX.1959, N. Chelidze (TBI5011635). Tbilisi, Kus-tba [Turtle lake], 670 m, 20.IX.1964, N. Chelidze (TBI5014051). Tbilisi, Kus-tba – [Turtle lake], *Fagus* forest, soil, 670 m, 06.II.1916, N. Voronikhin (TBI5015570). Teleti Range, soil, 1800 m, 03.III.1912, A. Danilov (TBI5015566). Vere river, 04.VIII.1918, G. Spagorov (TBI5011622).

Morphotype '*Cladonia subrangiformis*': GURIA: Chokhatauri, Bakhmaro, rock cracks, 2000 m, 21.VIII.1964, Ts. Inashvili (TBI5014056). KAKHETI: Dedoplistskaro, Shiraki, Vashlovani Nature Reserve, *Pistacia* open woodland, soil, 350 m, 10.XI.1968, N. Chelidze (TBI5014052). Ibidem, *Betula* forest, mosses, 350 m, 05.XI.1970, M. Jokhadze (TBI5015384). Ibidem, *Fagus-Abies* forest, stub, 350 m, 14.IV.1988, Ts. Inashvili (TBI5008729). Ibidem, 16.IV.1988, Ts. Inashvili (TBI5008490). SAMTSKHE-JAVAKHETI: Borjomi, Bakuriani, Tskhratskaro mt., 01.VII.1916, N. Voronikhin (TBI5011618). SHIDA KARTLI: Java, 1600 m, 10.VII.1981, Ts. Inashvili (TBI5002685). TBILISI: Tbilisi, Tsavkiskishevi river, NW slope, soil, 24.IV.1965, N. Chelidze (TBI5011741). Teleti Range, soil, 1700 m, 24.IX.1962, N. Chelidze (TBI5014047).

***Cladonia gracilis* subsp. *elongata*** (Wulfen) Vain.

MTSKHETA-MTIANETI: Kazbegi, Mtiuleti, Devdoraki river, *Alnus* forest, mossy rocks, 07.IX.1957, K. Kimeridze (TBI5002367). Kazbegi, Devdoraki river, 09.VII.1957, K. Kimeridze (TBI5012253). Kazbegi, Kazbegi mt., 2800 m, 1957, K. Kimeridze (TBI5012253, TBI5015397).

***Cladonia* cf. *libifera*** Savicz

MTSKHETA-MTIANETI: Dusheti, Barisakho, 1959, Ts. Inashvili (TBI).

***Cladonia macilenta*** Hoffm.

ABKHAZIA: Gulripshi, Sakeni river, 1950 m, 13.VII.1961, I. Dylevskaya (TBI5002290). ADJARA: Batumi, Batumi Botanical Garden, scree, 100 m, 05.IX.1977, Ts. Inashvili (TBI). IM-ERETI: Kutaisi, Baghdati, Sairme resort, *Fagus-Carpinus* forest, soil, 930 m, 27.VII.1961, Ts. Inashvili (TBI5011689). RACHA-LECH-KHUMI - KVEMO SVANETI: Zemo Racha, mossy rocks, 27.VIII.1927, G. Voronov (TBI). Oni, Glola, 1500 m, 19.VII.1963, Ts. Inashvili (TBI5016038). Oni, Glola, 19.VII.1963, Ts. Inashvili (TBI5002376). Oni, Shovi, soil-limestone, 2200 m, 17.VII.1963, Ts. Inashvili (TBI5011489). SAMEGRELO-ZEMO SVANETI: Mestia, soil, 03.VIII.1975, Ts. Inashvili (TBI5002377). Mestia, Chuberi, Sgurishi, Nenskra river, soil, 800 m, 22.VII.1976, Ts. Inashvili (TBI5011685). Ibidem, Tita, Nenskra river, *Fagus-Picea* forest, rotten log, 1000 m, 22.VII.1976, Ts. Inashvili (TBI5002283). Ibidem, Papalara, *Paliurus* and *Tortella tortuosa*, 800 m, 1976, Ts. Inashvili (TBI5015333). Ibidem, thorny shrubs, soil, 800 m, 1976, Ts. Inashvili (TBI5015332). Mestia, Ipari, Ipari-Kala, *Picea-Abies* forest, soil, 1000 m, 03.VIII.1975, Ts. Inashvili (TBI5016046). Mestia, Nakra river sources, 1700 m, 1976, Ts. Inashvili (TBI5008470). Mestia, Nakra river, pasture field, soil, 02.VIII.1976, Ts. Inashvili (TBI5011690). Mestia, Nakra river sources, 1700 m, 03.VIII.1976, Ts. Inashvili (TBI5002695). Mestia, Nakra river sources, mossy rocks, 03.VIII.1976, Ts. Inashvili (TBI5002351). Mestia, Vedi, Khaishura river, soil, 1600 m, 17.VIII.1976, Ts. Inashvili (TBI5016047). SAMTSKHE-JAVAKHETI: Borjomi, Kvabiskhevi, *Picea-Abies* forest, among mosses, 1986, Ts. Inashvili (TBI5003109). Borjomi, Kvabiskhevi, soil, 09.VIII.1986, Ts. Inashvili (TBI5002353).

Chemotype '*Cladonia bacillaris*': ABKHAZIA: Gagra, Lidzava, Bichvinta-Miusera Strict Nature Reserve, 100 m, 25.VI.1980, Ts. Inashvili (TBI5011540). Gali, forest, 13.VII.1961, I. Dylevskaya (TBI5002350). ADJARA: Batumi, Batumi, Batumi Botanical Garden, mosses, 100 m, 03.IX.1977, Ts. Inashvili (TBI). RACHA-LECHKHUMI - KVEMO SVANETI: Oni, Glola, birch forest, soil, 1800 m, 1963, Ts. Inashvili (TBI5002702). SAMEGRELO-ZEMO SVANETI: Mestia, Vedi, Khaishura river, *Betula* forest, soil, 1800-2000 m, 17.VIII.1976, Ts. Inashvili (TBI5002379). Mestia, Vedi, Khaishura river, birch forest, soil, 1600 m, 17.VIII.1976, Ts. Inashvili (TBI5016047). Mestia, soil, 03.VIII.1975, Ts. Inashvili (TBI5002378). SAMTSKHE-JAVAKHETI: Borjomi, Bakuriani, Sakochao station, river, *Abies-Picea* forest, soil, 20.VII.1919, V. Kozlovsky (TBI5002284). Borjomi, Kvabiskhevi, *Betula* forest, soil, 2000 m, 1986, Ts. Inashvili (TBI5015334).

***Cladonia macroceras* (Delise) Hav.**

ABKHAZIA: Gagra, Adzapshiriver, *Fagus-Abies* forest, soil, 2200 m, 19.X.1934, M. Sakhokia (TBI5011730). Gagra, Pshegishkhva mt., Ritsa lake, soil, 1050 m, 15.X.1934, M. Sakhokia (TBI5015505). ADJARA: Khulo, Sari Chairi, Stone, 15.VII.1957, A. Dmtrieva (TBI5008485). MTSKHETA-MTIANETI: Dusheti, Mitkuli river, *Picea-Populus* and *Corylus* forest, mosses, 29.VIII.1937, D. Grigorashvili (TBI5015506). Dusheti, Roshka, Abudelauri lakes, 2400 m, 27.VIII.1961, Ts. Inashvili (TBI5002253). Dusheti, Roshka, Abudelauri lakes, forest, stub, 2800 m, 27.VIII.1961, Ts. Inashvili (TBI5015508). Dusheti, Shatili, phrygane like community, soil, 17.VIII.1959, Ts. Inashvili (TBI5011673). Dusheti, Shatili, 17.VIII.1959, Ts. Inashvili (TBI5011674). Kazbegi, *Quercus* forest and *Rhododendron*, rotten stub, 20.VII.1971, Ts. Inashvili (TBI5002368). Kazbegi, soil, 20.VII.1971, Ts. Inashvili (TBI5012694). Kazbegi, Stepantsminda, Devdoraki, 2000 m, 14.VII.1971, Ts. Inashvili (TBI5011679). Ibidem, stub, 1800 m, 14.VII.1971, Ts. Inashvili (TBI5011680). Ibidem, forest, 1950 m, 14.VII.1971, E. & N. Busch (TBI5014054). Ibidem, spruce-beech forest, fallen branches, 1900 m, 14.VII.1971, Ts. Inashvili (TBI5011678). Ibidem, soil, 2000 m, 14.VII.1971, Ts. Inashvili (TBI5002254). Ibidem, *Quercus* forest, soil, 1650 m, 14.VII.1971, Ts. Inashvili (TBI5002249). Ibidem, stones, 2000 m, 14.VII.1971, Ts. Inashvili

(TBI5011677). Kazbegi, stub, 23.VIII.1980, Ts. Inashvili (TBI5011688). RACHA-LECHKHUMI - KVEMO SVANETI: Ambrolauri, Khikha mt., Krikhula river, oak forest, rotten stub, 2200 m, 18.VIII.1982, Ts. Inashvili (TBI5015509). Ibidem, *Picea-Abies* forest, stub, 2000 m, 18.VIII.1982, Ts. Inashvili (TBI5015512, TBI5002372). Lentekhi, Devashi river sources, Labrakhi rocks, 2400 m, 03.VIII.1979, D. Mtskhvetadze (TBI5013559). Lentekhi, Latkviari, Jvari Pass, spruce-beech forest, rotten fallen branches, 2500 m, 26.VII.1963, Ts. Inashvili (TBI5011675). Lentekhi, Sasashi, Jvari Pass, beech forest, stub, 1500 m, 26.VII.1963, Ts. Inashvili (TBI5013558). Lentekhi, Vanistskali, Kheledula river, spruce forest, stub, 2500 m, 16.VIII.1979, D. Mtskhvetadze (TBI5011687). SAMEGRELO-ZEMO SVANETI: Mestia, Becho, Dolra river sources, 2000 m, 31.VII.1976, Ts. Inashvili (TBI5002257). Mestia, Becho, Dolra river sources, *Juniperus-Cotinus coggygria*, soil, 2000 m, 17.VIII.1976, Ts. Inashvili (TBI5011488). Mestia, Chuberi, Sgurishi, Nenskra river, 800 m, 22.VII.1976, Ts. Inashvili (TBI5011685). Mestia, Dolra river, Mazeri mt., mossy rocks, moraines, 2000 m, 25.VII.1976, Ts. Inashvili (TBI5002251). Mestia, Dolra river, soil, 2000 m, 10.VIII.1976, M. Sokhadze (TBI5002256). Mestia, Donghuz-orun Pass, meadow, soil, 2600 m, VIII.1977, G. Kikava (TBI5011686). Mestia, Mazeri, Dolra river, forest, 1900 m, 25.VII.1976, Ts. Inashvili (TBI5011504). Mestia, Mazeri, Dolra river, soil, 1850 m, 25.VII.1976, Ts. Inashvili (TBI5002250). Ibidem, wood, 1900 m, 25.VII.1976, Ts. Inashvili (TBI5011684). Mestia, mosses, 22.VIII.1963, K. Kimeridze (TBI5002255). Mestia, Nakra river sources, *Picea-Abies* forest, mossy rocks, 1650 m, 03.VIII.1976, Ts. Inashvili (TBI5002252). Mestia, Nakra river sources, shrubs, soil, 1800 m, 03.VIII.1976, Ts. Inashvili (TBI5003103). *Picea-Fagus* forest, mossy rocks, 09.IX.1938, Sh. Nakhutsrishvili (TBI5012252). SAMTSKHE-JAVAKHETI: Borjomi, Bakuriani, Sakochao river, Borjomistskali river, *Picea* forest, soil, 09.VII.1916, N. Voronikhin (TBI5015392). Borjomi, Bakuriani, Tskhratskaro, forest, soil, 28.VI.1927, V. Kozlovsky (TBI5015503). Borjomi, Bakuriani, Tskhratskaro mt., *Betula* forest, log, 02.VII.1916, N. Voronikhin (TBI5015502). Ibidem, *Betula* forest, soil, 22.V.1916, N. Voronikhin (TBI5015501). Ibidem,

dem, top, SW slope, 03.VII.1916, N. Voronikhin (TBI5011616). SHIDA KARTLI: Kareli, Aletsistsikhe, Dzama river, *Pinus* forest, soil, 15.VII.1967, Ts. Inashvili (TBI5011676).

***Cladonia macrophyllodes* Nyl.**

MTSKHETA-MTIANETI: Dusheti, Kistani, road Zhinvali-Barisakho-Shatili, Arguni, river bank, 42°35'20"N 45°05'46"E, vertical slates, 2000 m, 20.VIII.2015, T. Ahti, A.R. Burgaz, I. Kupradze & A. Jorjadze (MACB109396).

***Cladonia mitis* Sandst.**

ABKHAZIA: Gagra, Iupshara river, *Carpinus betulus* forest, soil, 2000 m, 30.X.1934, M. Sakhokia 38 (H, TBI5000445). KAKHETI: Akhmeta, Alatovani, Mtatusheti, 07.VII.1935, N. Ketskhoveri (TBI5008486). Ibidem, 14.VI.1935, N. Ketskhoveri (TBI5000448). Akhmeta, Omalo, *Carpinus caucasica* forest, soil, 1976 (TBI5000465). Lagodekhi, Lagodekhi reserve, *Fagus* forest, mossy rocks, 2000 m, 15.VIII.2005, J.L. Deveal (TBI5002679). MTSKHETA-MTIANETI: Dusheti, Mitkuli river, *Fagus-Picea* forest, rotten tree, 29.VIII.1937, D. Grigorashvili (TBI5000450). Dusheti, Mitkuli river, forest edge, soil, 29.VIII.1937, D. Grigorashvili (TBI5015506). Dusheti, Pshav-Khevsureti Range, Kistani, Datvisjvari Pass, road Zhinvali-Barisakho-Shatili, 42°31'20"N, 45°03'22"E, pasture quartzite, 2670 m, 20.VIII.2015, T. Ahti, A.R. Burgaz, I. Kupradze & A. Jorjadze (MACB109397). Dusheti, Roshka, Abudelaure lakes, 2300 m, 27.VIII.1961, Ts. Inashvili (TBI5011485). Ibidem, *Juniperus* open woodland, soil, 2500 m, 28.VIII.1961, Ts. Inashvili (TBI5016485). Dusheti, Roshka, Aragvi river, 2500 m, 28.VIII.1961, Ts. Inashvili (TBI5002382). Dusheti, Zetukis Tsveri mt., mossy rocks, 14.VIII.1937, D. Grigorashvili (TBI5000451). Kazbegi, Chachi river, mossy rocks, 3000 m, 16.VIII.1958, K. Kimeridze (TBI5000457). Kazbegi, Devdoraki river, N slope, mossy rocks, 2000 m, 14.VII.1971, Ts. Inashvili (TBI5011486). Ibidem, mossy rocks, 1950 m, 14.VII.1971, Ts. Inashvili (TBI5000460). Kazbegi, Gergeti, Datvis Tke [Bear forest], pine rotten stub, 28.VIII.1944, M. Bakradze (TBI5000452). Kazbegi, Kazbegi mt., 1950 m, 20.VII.1971, Ts. Inashvili (TBI5002694). Kazbegi, Khde river, alpine carpet, 2600 m, 23.VIII.1958, K. Kimeridze (TBI5011756). Kazbegi, Khde river, *Rhododendron*, soil, 2600 m, 23.VIII.1958, K. Kimeridze

(TBI5011734). Kazbegi, Bloriver, *Alnus incana* forest, 1900 m, 23.VIII.1958, K. Kimeridze (TBI5011754). Kazbegi, soil, 1800 m, 23.VIII.1980, Ts. Inashvili (TBI5011688). RA-CHA-LECHKHUMI - KVEMO SVANETI: Ambrolauri, Krikhula river, Khikha mt., peat bog, 1900 m, 18.VIII.1982, Ts. Inashvili (TBI5015509). Lentekhi, Moashi, Jvari Pass, rotten log, 2500 m, 26.VII.1963, Ts. Inashvili (TBI5002683). Lentekhi, Sasashi, Sakhare, boulders at limestone rocks, 1800 m, 26.VII.1963, Ts. Inashvili (TBI5003108). Lentekhi, Vanistskali, Kheledula river, soil, 2600 m, 16.VIII.1979, D. Mtskhvetadze (TBI5011687). SAMEGRELO-ZEMO SVANETI: Abasha, Vedi, Khaishura river, birch forest, soil, 1600 m, 17.VIII.1976, Ts. Inashvili (TBI5002232). Mestia, Adishi, meadow, soil, 2400 m, 22.VI.1977, G. Kikava (TBI5011765). Mestia, Becho, Dolra river sources, *Fagus* log, 2000 m, 29.VII.1976, Ts. Inashvili (TBI5000465). Ibidem, *Picea* forest, soil, 2000 m, 17.VIII.1976, Ts. Inashvili (TBI5011488). Mestia, Becho, Guli, *Picea-Abies* forest, stub, 1500 m, 16.VII.1963, Ts. Inashvili (TBI5011760). Mestia, Mazeri, Ushba mt. base, 18.VII.2014, K. Batsatsashvili & I. Kupradze (TBI). Mestia, Nakra river, soil, 2450 m, VII.1976, G. Kikava (TBI5011764). SAMTSKHE-JAVAKHETI: Borjomi, Bakuriani, *Rhododendron caucasicum* shrub, soil, 18.V.1919, V. Kozlovsky (TBI5000443). Ibidem, Tskhratskaro mt., N slope, 03.VII.1916, N. Voronikhin (TBI5000442). Ibidem, Tskhratskaro mt., N slope, *Buxus-Carpinus* community, stub, 22.V.1916, V. Kozlovsky (TBI5000441). Borjomi, Mitarbi station-Kokhta mt., riverside, *Fagus-Picea* forest, rotten tree, 29.VI.1916, N. Voronikhin (TBI5000439). SHIDA KARTLI: Java, Edisa, *Picea-Abies* forest, soil, 1560 m, 21.VII.1973, Ts. Inashvili (TBI5000463). Java, Edisa, Ermani, Keli lake, *Juniperus* shrub, soil, 2600 m, 30.VII.1973, Ts. Inashvili (TBI5000462). Java, Edisa, *Pinus* forest, soil, 1800 m, 09.VIII.1981, Ts. Inashvili (TBI5000467). Ibidem, riparian forest, 1800 m, 09.VIII.1981, Ts. Inashvili (TBI5002678). Ibidem, rock, 1850 m, 21.VII.1963, Ts. Inashvili (TBI5011762). Java, Edisa-Sgubiri, SE slope, 1650 m, 04.VII.1973, Ts. Inashvili (H, TBI5000461).

***Cladonia phyllophora* Hoffm.**

SAMEGRELO-ZEMO SVANETI: Mestia, Becho, Dolrariversources, 2000m, 31.VII.1976,



Ts. Inashvili (TBI5011704). SHIDA KARTLI: Java, Sgubiri, alpine zone, mossy rocks, 1900 m, 04.VIII.1973, Ts. Inashvili (TBI5011692).

***Cladonia pleurota* (Flörke) Schaer.**

ADJARA: Khulo, Danisparauli, Goderzi Pass, Arsiani Range, mossy rocks, 2300 m, 24.VII.1962, K. Kimeridze (TBI5000432). Kobuleti, Kintrishi Nature Reserve, *Picea-Fagus* forest, rotten stub, 300 m, 09.IX.1977, Ts. Inashvili (TBI). MTSKHETA-MTIANETI: Dusheti, Pshav-Khevsureti Range, Kistani, Datvisjvari Pass, road Zhinvali-Barisakho-Shatili, 42°31'20"N, 45°03'22"E, pasture quartzite, 2670 m, 20.VIII.2015, T. Ahti, A.R. Burgaz, I. Kupradze & A. Jorjadze (MACB109399). Ibidem, Maghrani, road Zhinvali-Barisakho-Shatili, Aragvi, river bank, 42°25'55"N 44°56'42"E, close to *Fagus orientalis* forest, slates, 1200 m, 20.VIII.2015, T. Ahti, A.R. Burgaz, I. Kupradze & A. Jorjadze (MACB109398). Kazbegi, Juta, Sadutseli river, 26.VII.1950, K. Kimeridze (TBI5002295). Kazbegi, Juta, Sadutseli river, forest edge, soil, 26.VII.1950, Ts. Inashvili (TBI5011575). RACHA-LECHKHUMI - KVEMO SVANETI: Lentekhi, 18.VII.1978, L. Kukhaleishvili (TBI5002323). Lentekhi, Devashi-Lakhashura river sources, Labrakhi rocks, mossy soil, 2400 m, 03.VIII.1979, Ts. Inashvili (TBI5016020). Lentekhi, Koruldashi, 2050 m, 18.VII.1978, L. Kukhaleishvili (TBI5011600). Lentekhi, Labrakhi, Tskhenistskali river, 2030 m (TBI5000436). SAMEGRELO-ZEMO SVANETI: Mestia, Laila, Medzibna, 23.VII.1910, N. Popov (TBI5002341). Mestia, Ughvizi Pass, soil, 10.VIII.1963, Ts. Inashvili (TBI5015348). Mestia, Ushguli, 2000 m, 04.VIII.1973, Ts. Inashvili (TBI5008473). SAMTSKHE-JAVAKHETI: Borjomi, Bakuriani, 22.V.1916, I. Dylevskaya & V. Kozlovsky (TBI5015364). Ibidem, soil, 1800 m, 24.IV.1916, V. Kozlovsky (TBI5015363). Ibidem, Tshratskaro, *Picea-Abies* forest, rotten tree, 06.IX.1966, Ts. Inashvili (TBI5011560). Ibidem, Tshratskaro, rotten tree, 01.VII.1916, N. Voronikhin (TBI5015362).

***Cladonia pocillum* (Ach.) Grognot**

ABHKHAZIA: Gagra, Arabika mt., *Fagus* forest, soil, 1800 m, 15.VII.1962, Ts. Inashvili (TBI5002687). Gagra, Bambei-Iashta ravine, *Betula* forest edge, soil, 18.VIII.1934, M. Sakhokia (TBI5015540). Gagra, Gagra Range, Berchili mt., meadow, soil, 1500 m, 17.VII.1962, Ts. Inashvili (TBI5011705).

Gagra, Gagra Range, Kamenny Klad, 2400 m, 19.VII.1962, Ts. Inashvili (TBI5013515). Gagra, Gagra Range, Kamenny Klad, rotten log, 2400 m, 19.VII.1962, Ts. Inashvili (TBI5003090). Gagra, Gelgeluki, Gagra Range, *Picea-Fagus* forest with *Rhododendron luteum*, soil, 2000 m, 14.VII.1962, Ts. Inashvili (TBI5003101). KAKHETI: Sagarejo, Zhati, Tsiv-Gombori Range, S slope, 17.VIII.1948, V. Pakhunova (TBI5015549). KVEMO KARTLI: Tetrtskaro, Manglisi, conifer forest, soil, 1620 m, 01.IX.1909, N. Nikolaev (TBI5015471). MTSKHETA-MTIANETI: Dusheti, Chikaani, 1300 m, 29.X.1960, Ts. Inashvili (TBI5002276). Dusheti, Chinti, Aragvi river, SW slope, 28.VII.1959, Ts. Inashvili (TBI5016101). Dusheti, Chinti, Saghornia mt., 28.VII.1959, Ts. Inashvili (TBI5002275). Dusheti, Kistani, road Zhinvali-Barisakho-Shatili, Arguni, bank river, 42°35'20"N, 45°05'46"E, vertical slates, 2000 m, 20.VIII.2015, T. Ahti, A.R. Burgaz, I. Kupradze & A. Jorjadze (MACB109400). Dusheti, Mleta, 25.VII.1960, Ts. Inashvili (TBI5016104). Kazbegi, Gergeti monastery, 1400 m, 24.VIII.1980, Ts. Inashvili (TBI5011709). Kazbegi, Stepantsminda, Devdoraki, forest, soil, 2300 m, 19.VIII.1980, G. Trass (TBI5011707). Kazbegi, Tetri Aragvi river, 1900 m, 20.VII.1971, G. Zamtardze (TBI5011706). Mtskheta, Tsitsamuri, 18.VII.1959, Ts. Inashvili (TBI5016102). RACHA-LECHKHUMI - KVEMO SVANETI: 09.VIII.1930, L. Kemularia-Natadze (TBI5011509). Ambrolauri, Velevi, Satsalike mt., 1700 m, 20.VII.1963, M. Sokhadze (TBI5015347). Ambrolauri, Velevi, Satsalike mt., *Betula* forest, soil, 1900 m, 23.VII.1982, Ts. Inashvili (TBI5011528). Ibidem, forest, soil, 1700 m, 21.VII.1963, Ts. Inashvili (TBI5013565). Ibidem, *Picea* forest and *R. luteum*, mossy rocks, 2000 m, 23.VII.1982, Ts. Inashvili (TBI5011527). Oni, Glola, soil, 1350 m, 18.VII.1963, Ts. Inashvili (TBI5016015). Oni, Shovi, Mamisoni Pass, *Quercus* forest, soil, 2600 m, 17.VIII.1965, Ts. Inashvili (TBI5003107). Tsageri, Latsundari, 31.VIII.1952, V. Pakhunova (TBI5015557). SAMEGRELO-ZEMO SVANETI: Martvili, Migaria mt., *Paliurus* community, mossy soil, 19.VIII.1923, B. Shishkin (TBI5013000). Martvili, Zugdidi, Otipure, Okhachkue massif, forest, mossy log, 1650 m, 12.VII.1964, K. Kanchaveli (TBI5016051). Mestia, Khalde glazier, alpine carpet, 1800 m, 08.VIII.1963, K. Kimeridze (TBI5015511). Mestia, Usghuli, 2200 m, 04.VIII.1963, Ts. In-

ashvili (TBI5013564). Mestia, Utviri Pass, Kira peak, Rock, 2700 m, VIII.1976, M. Sokhadze (TBI5011724). SAMTSKHE-JAVAKHETI: Akhaltsikhe, Akhaltsikhe, Kodiana, boulders, 06.VI.1916, V. Kozlovsky (TBI5011710). Borjomi, Bakuriani, Tskhratskaro mt., 01.VII.1916, N. Voronikhin (TBI5015527). Ibidem, *Pinus-Quercus* forest, mossy rocks, 01.VII.1916, N. Voronikhin (TBI5015528). SHIDA KARTLI: Gori, forest, stub, 28.III.1916, V. Kozlovsky (TBI5015522). Gori, 28.III.1916, V. Kozlovsky (TBI5015520). TBILISI: Tbilisi, boulders, 27.I.1908, D. Pagirev (TBI5015513). Tbilisi, Tbilisi Botanical Garden, soil, 725 m, 03.XII.1919, Kushke (TBI5011711). Ibidem, stone, 725 m, 27.IV.1910, G. Voronov (TBI5000415). Java, Edisa, Keli plateau, open wood, 3000 m, VIII.1983, N. Margalitadze & R. Gagnidze (TBI5003102).

***Cladonia pyxidata* (L.) Hoffm.**

ABKHAZIA: Gagra, Akvara, Ritsa lake, Bzipi river, 1000 m, 25.VII.1962, Ts. Inashvili (TBI5003089). Ibidem, *Pinus-Betula* forest, birch tree, 1000 m, 25.VII.1962, Ts. Inashvili (TBI5011517). Gagra, Avadkhara, Gagra Range, *Quercus* forest, mossy rocks, 1600 m, 27.VII.1961, I. Nakhutrishvili (TBI5003088). Gagra, Gagra Range, Kamenny Klad, *Betula* forest, soil, 2400 m, 18.VII.1962, Ts. Inashvili (TBI5015344). Gagra, Gelgeluki, Gagra Range, 1500 m, 15.VII.1962, Ts. Inashvili (TBI5003558). Gagra, Gyuzle, Gagra Range, Berchili mt., birch base, 1500 m, 11.VII.1962, Ts. Inashvili (TBI5011518). Gagra, Iupshara, Gega river, 600 m, 14.VI.1979, A. Dolukhanov (TBI). Gagra, Lidzava, Bichvinta-Miusera Strict Nature Reserve, 100 m, 28.VI.1980, Ts. Inashvili (TBI5011526). Gali, Sakeni river sources, 1950 m, 20.VIII.1961, I. Dylevskaya (TBI5011513). Gali, Sakeni river sources, forest, soil, 2000 m, 21.VII.1962, I. Dylevskaya (TBI5011515). Ibidem, *Betula* forest, mossy rocks, 20.VIII.1961, I. Dylevskaya (TBI5012270). Ibidem, meadow, soil, 1950 m, 20.VIII.1961, I. Dylevskaya (TBI5002270). Sokhumi, Kelasuri, moraines and thin soil cover, 2400 m, 20.VIII.1961, Ts. Inashvili (TBI5011514). Detsman-Deresi, forest edge, soil, 21.VIII.1910, G. Voronov (TBI5002344). Detsman-Deresi, mosses, 21.VII.1910, G. Voronov (TBI). ADJARA: Khulo, Katriani, Katriani mt., mossy rocks, 2100 m, 30.VII.1930, A. Makashvili (TBI5012263, TBI5012262). GURIA: Chokhatauri, Bakh-

maro, forest edge, mossy rocks, 21.VIII.1964, Ts. Inashvili (TBI5014055). Ibidem, forest, log, 19.VIII.1955, G. Zamtaradze (TBI5015561). Ibidem, *Pinus* forest, base, 2000 m, 21.VIII.1964, Ts. Inashvili (TBI5013569). IM-ERETI: Kharagauli, Partskhnali, *Bothriochloa* turfs and soil, 18.X.1937, V. Pakhunova (TBI5015542). Baghdati, Sairme, 930 m, forest, 05.VIII.1960, Ts. Inashvili (TBI5013562). Ibidem, 05.X.1962, Ts. Inashvili (TBI5011516). Baghdati, Sairme, scree, 930 m, 27.VII.1961, Ts. Inashvili (TBI5011512, TBI5011716). KAKHETI: Akhmeta, Parsura, Chesho way, Festuca community, soil, 17.VIII.2014, K. Batsatsashvili & I. Kupradze (TBI). Dedoplistskaro, Jelal-Oghly, *Quercus-Carpinus betulus* and *Paliurus* forest, open woodland, soil, 20.IV.1922, A. Shelkovnikov (TBI5015343). Dedoplistskaro, Jelal-Oghly, *Quercus-Carpinus betulus* and *Paliurus* forest, open woodland, soil, 20.V.1920, A. Shelkovnikov (TBI5015531). Dedoplistskaro, Shiraki, Vashlovani Nature Reserve, *Fagus-Abies* forest, log, 350 m, 04.X.1989, Ts. Inashvili (TBI5015361). Ibidem, Lekistskali river, 350 m, 05.IX.1990, Ts. Inashvili (TBI5016066). Sagarejo, Gombori, 1325 m, 26.VII.1948, V. Pakhunova (TBI5012264). Sagarejo, Gombori, among mosses 1400 m, 05.VIII.1948, V. Pakhunova (TBI5015547). Lagodekhi, Lagodekhi reserve, *Fagus* forest, soil, 2240 m, 04.VIII.1973, K. Tigishvili (TBI5016491). Sagarejo, Mariamjvari, Antokis Khevi river, 1950 m, 01.III.1963, N. Chelidze (TBI5014035). Sagarejo, oak forest, mossy soil, 05.VII.1950, A. Ghviniashevili (TBI5015551). Sagarejo, oak forest, *Pistacia* open woodland, soil, 05.VII.1950, A. Ghviniashevili (TBI5015550). Sagarejo, Udabno, 01.XII.1947, M. Gurgenedze (TBI5012265). Sagarejo, Ujarma, Iori river, *Fagus* forest, rotten beech, 1000 m, 16.VIII.1948, I. Nakhutrishvili (TBI5015548). Sagarejo, Zhaty, Tsiv-Gombori Range, S slope, 17.VIII.1948, V. Pakhunova (TBI5015549). KVEMO KARTLI: Tetrtskaro, Alekseevka, 800 m, 27.VII.1966, Ts. Inashvili (TBI5011720). Tetrtskaro, Manglisi, shrubs, soil, 07.VII.1920, O. Sedelmeyer (TBI). Tetrtskaro, Mukhati, 10.VIII.1925, V. Pakhunova (TBI5011567). MTSKHETA-MTIANETI: Dusheti, Ananuri, 900 m, 21.VIII.1961, Ts. Inashvili (TBI5016064). Dusheti, Ananuri, Sabaskhevi, Aragvi river, *Pinus* forest, 1000 m, 21.VII.1960, Ts. Inashvili (TBI). Dusheti, Barisakho, 28.VIII.1973, G. Zamtaradze

- (TBI5013570). Ibidem, boulders-soil, 25. VIII.1959, Ts. Inashvili (TBI5016105). Dusheti, Dzmiani, *Fagus-Abies* forest, stub, 1300 m, 29.X.1960, Ts. Inashvili (TBI5002269). Dusheti, Gudauro, Aragvi river, rocks and soil, 1600 m, 28.X.1960, Ts. Inashvili (TBI5011715). Dusheti, Magaroskari, 1400 m, 16.VII.1960, Ts. Inashvili (TBI5016103). Dusheti, Makarta, Gudamakris Aragvi river, 31.X.1960, Ts. Inashvili (TBI5016063). Dusheti, Makarta, *Picea-Pinus* forest, soil, 31.X.1960, Ts. Inashvili (TBI5016107). Dusheti, Mitkuli river, soil, 29.IX.1937, D. Grigorashvili (TBI5015541). Dusheti, Mleta, Aragvi river, mosses, 25.VII.1960, Ts. Inashvili (TBI5016474). Dusheti, Roshka, Abudelauro lakes, *Juniperus* open woodland, soil, 2400 m, 27.VIII.1961, Ts. Inashvili (TBI5016486). Dusheti, Roshka, Iglia mt., forest, 2200 m, 26. VIII.1961, Ts. Inashvili (TBI5002688). Dusheti, Sabaskhevi, Ananuri, Aragvi river, 21.VII.1960, Ts. Inashvili (TBI). Dusheti, Shuapkho, 1200 m, 31.VII.1961, Ts. Inashvili (TBI5015370). Dusheti, Shuapkho (TBI). Dusheti, Simagreula river, 1200 m, 18.VII.1960, Ts. Inashvili (TBI5002699). Dusheti, Simagreula river, *Picea-Abies* forest, soil, 1200 m, 18.VII.1960, Ts. Inashvili (TBI5016062, TBI5013514). Dusheti, Zhinvali, *Pinus* forest, mossy rocks, 1800 m, 09.IX.1960, Ts. Inashvili (TBI5016106). Kazbegi, Chaukhi, 24. VII.1980, M. Ivanishvili (TBI5016492). Kazbegi, Juta, Sadutseli river, 26.VII.1950, K. Kimeridze (TBI5002294). Kazbegi, Juta, Sadutseli river, slates and soil cover, 26. VII.1950, Ts. Inashvili (TBI5011575). Kazbegi, Juta, Sadzrokhia, soil, 2500 m, 09.IX.1953, K. Kimeridze (TBI5015529, TBI5015560, TBI5015559). Kazbegi, Kurtisi, 840 m, 16. VII.1971, Ts. Inashvili (TBI5015359). Kazbegi, Sirkh Range, soil, 1800 m, 23.VIII.1980, M. Ivanishvili (TBI5011708). Kazbegi, Stepantsminda, Devdoraki, soil, 1600 m, 14. VII.1971, Ts. Inashvili (TBI5002265). Ibidem, soil, 1900 m, 25.VIII.1985, Ts. Inashvili (TBI5016493). Dusheti, Kistani, road Zhinvali-Barisakho-Shatili, Arguni, bank river, 42°35'20"N, 45°05'46"E, vertical slates, 2000 m, 20.VIII.2015, T. Ahti, A.R. Burgaz, I. Kupradze & A. Jorjadze (MACB109403). Dusheti, Pshav-Khevsureti Range, Kistani, Datvisjvari Pass, road Zhinvali-Barisakho-Shatili, 42°31'20"N 45°03'22"E, pasture quartzite, 2670 m, 20.VIII.2015, T. Ahti, A.R. Burgaz, I. Kupradze & A. Jorjadze (MACB109405). Dusheti, Pshav-Khevsureti Range, Maghrani, road Zhinvali-Barisakho-Shatili, Aragvi, river bank, 42°25'55"N, 44°56'42"E, close to *Fagus orientalis* forest, slates, 1200 m, 20.VIII.2015, T. Ahti, A.R. Burgaz, I. Kupradze & A. Jorjadze (MACB109402). RACHA-LECHKHUMI - KVEMO SVANETI: Mchero, forest, mossy rocks, 03.IX.1952, V. Pakhunova (TBI5015558). Zumpa, 29.VIII.1952, V. Pakhunova (TBI5015555). Ambrolauri, Kajiani, forest edge, soil, 21.VIII.1951, V. Pakhunova (TBI5015554). Ambrolauri, Kajiani, Likhuni river, *Rhododendron caucasicum* shrubs, soil, 2000 m, 14.VII.1982, Ts. Inashvili (TBI5002268). Ambrolauri, Khikha mt., Krikhula river, *Picea-Abies* forest, stub, 2000 m, 18.VIII.1982, Ts. Inashvili (TBI5015512). Ambrolauri, Nakerala Pass, 1230 m, 15. VIII.1951, V. Pakhunova (TBI5015553). Ambrolauri, Tlugh, soil, 1500 m, 30.VII.1964, Ts. Inashvili (TBI5016484, TBI5016484). Ambrolauri, Vele, Satsalike mt., scree, 1700 m, 20.VII.1963, M. Sokhadze (TBI5015347). Lentekhi, Kheledula river, *Betula* forest, soil, 1500 m, 12.VII.1979, Ts. Inashvili (TBI5012272). Ibidem, *Picea-Pinus* forest, soil, 1700 m, 12.VII.1979, Ts. Inashvili (TBI5002272). Ibidem, rocks and soil, 1500 m, 01.VII.1979, Ts. Inashvili (TBI5000426). Ibidem, birch forest edge, soil, 1450 m, 12. VII.1979, Ts. Inashvili (TBI5003091). Lentekhi, Koruldashi, Koruldashi glazier, pasture field, soil, 2400 m, 01.VIII.1963, Ts. Inashvili (TBI5011520, TBI5013568). Lentekhi, Lapuri, Tskhenistskali river sources, *Picea* forest and *Rhododendron luteum*, mosses, 23. VII.1979, Ts. Inashvili (TBI5015375). Lentekhi, Tskhenistskali river sources, Lapuri river, *Picea-Abies-Castanea* forest, stones, 1600 m, 25.VII.1973, A. Dolukhanov (TBI5011525). Lentekhi, Tskhenistskali, Lapuri river sources, forest edge, soil, 28. VIII.1979, A. Dolukhanov (TBI5015360). Oni, 01.VIII.1948, Z. Kutsenko (TBI5016052). Oni, 30.VII.1948, Z. Kutsenko (TBI5016053). Oni, Chala, soil, 1000-1100 m, 09.IX.1964, Ts. Inashvili (TBI5015350). Oni, Chala, tragacanth community, soil, 12.IX.1964, Ts. Inashvili (TBI5015351). Oni, Ghebi, Kirtukhi glacier, soil, 22.VII.1930, L. Kemularia-Natadze (TBI5003087). Oni, Glola, forest edge, 1500 m, 13.VIII.1963, Ts. Inashvili (TBI5016041). Oni, Glola, forest edge, 1500 m, 16.VII.1963, Ts. Inashvili (TBI5011717). Ibidem, 19. VII.1963, Ts. Inashvili (TBI5013567,



TBI5012271, TBI5016016). Oni, pine forest, stub, 03.IX.1964, Ts. Inashvili (TBI5015563). Oni, Oni, Kvedrula river, *Fagus* forest, mossy rocks, 16.VIII.1982, Ts. Inashvili (TBI5015564). Oni, Shodakedela, Rioni river sources, forest, soil, 1400 m, 21.VIII.1965, Ts. Inashvili (TBI5015352). Oni, Shovi, Buba mt., soil, 01.VIII.1928, L. Kemularia-Natadze (TBI5011712). Oni, Shovi, Buba mt., soil, 01.VIII.1928, L. Kemularia-Natadze (TBI5015539). Oni, Shovi, Chanchakli river, *Rhododendron caucasicum* shrubs, soil, 1600 m, 28.VIII.1950, I. Nakhutrishvili (TBI5012268). Oni, Shovi, *Fagus* forest, rotten log, 1640 m, 15.VIII.1950, I. Nakhutrishvili (TBI5012266). Ibidem, forest edge, scree, 1600 m, 12.VIII.1950, V. Pakhunova (TBI5012269). Ibidem, meadow, soil, 2400 m, 29.VIII.1964, Ts. Inashvili (TBI5011719). Ibidem, *Picea* forest, soil, 1650 m, 21.VIII.1950, I. Nakhutrishvili (TBI5012267). Ibidem, *Pinus* forest, pine base, 1620 m, 08.VIII.1950, V. Pakhunova (TBI5015552). Ibidem, rocks, 1625 m, 12.VIII.1920, Pakhunova (TBI). Ibidem, mixed forest, log, 29.VIII.1964, Ts. Inashvili (TBI5011691). Tsageri, Akhalchala, Tsikuri massif, Jonoula river sources, 1800 m, 26.VIII.1980, Ts. Inashvili (TBI5011727). Tsageri, Zumpa, 29.VIII.1952, Pakhunova (TBI5015556). SAMEGRELO-ZEMO SVANETI: Abasha, Vedi, Khaishura river, soil, 1600 m, 17.VIII.1976, Ts. Inashvili (TBI5016054). Abasha, Vedi, soil, 1600 m, 17.VIII.1976, Ts. Inashvili (TBI5002665). Martvili, Okhachkue massif, *Picea-Abies* forest, log, 1850 m, 07.VIII.1957, L. Kemularia-Natadze (TBI5002258). Ibidem, 1960, M. Sokhadze (TBI5011511). Martvili, Patara Sakona, Okhachkue massif, forest, mossy log, 1850 m, 13.VII.1964, K. Kanchaveli (TBI5013519). Martvili, Zugdidi, Otipure, Okhachkue massif, *Abies* forest, log, 1850 m, 12.VII.1964, K. Kanchaveli (TBI5013518). Mestia, Adishi, meadow, soil, 1500 m, 11.VIII.1963, Ts. Inashvili (TBI5011519). Mestia, Becho Pass, Dolra river, forest, soil, 2200 m, 31.VII.1976, Ts. Inashvili (TBI5011725). Mestia, Betkili, *Picea-Abies* forest, stub, 1500 m, 17.VII.2014, K. Batsatsashvili & I. Kupradze (TBI). Mestia, forest edge, mossy rocks, 1600 m, 02.VII.1975, Ts. Inashvili (TBI5011523). Mestia, Iaila Tsinovela, dry ravine, forest, soil, 25.VIII.1910, N. Popov (TBI5000419). Mestia, Lenjeri, *Picea-Abies* forest, log, 1500 m, 28.VII.1975, Ts. Inashvili (TBI5011524). Mestia, Mazeri, Dolra river,

soil, 1850 m, 25.VII.1976, Ts. Inashvili (TBI5008474). Mestia, Mazeri, Dolra river, soil, 1900 m, 24.VII.1976, Ts. Inashvili (TBI5016019). Mestia, Mulakhi, spruce-fir forest, stub, 1500 m, 14.VIII.1963, Ts. Inashvili (TBI5013566). Mestia, NW slope, 08.IX.1976, Ts. Inashvili (TBI5014036). Mestia, *Picea-Abies* forest, soil, 23.VII.1910, N. Popov (TBI). Mestia, Nakra river sources, *Juniperus* shrub, soil, 1700 m, 03.VIII.1976, Ts. Inashvili (TBI5002267). Mestia, Ughviri Pass, soil, 10.VIII.1963, Ts. Inashvili (TBI5011643). Mestia, Ushguli, *Fagus* forest, soil, 05.VIII.1963, Ts. Inashvili (TBI5013517). SAMTSKHE-JAVAKHETI: Adigeni, Zarzma, stones in deep moist ravine, 10.VII.1968, Ts. Inashvili (TBI5016018). Akhaltsikhe, Ghreli, Ghreli-Sapara monastery, *Pinus* forest, 1050 m, 14.VII.1968, Ts. Inashvili (TBI5015356). Akhaltsikhe, Ghreli, Sapara monastery, forest, soil, 1300 m, 11.VII.1968, Ts. Inashvili (TBI5008472, TBI5002263). Akhaltsikhe, Ghreli, *Alnus* forest, *Alnus* base, 800 m, 14.VII.1968, Ts. Inashvili (TBI5015355). Akhaltsikhe, Giorgitsminda, mossy soil, 1500 m, 12.VII.1968, Ts. Inashvili (TBI5008471, TBI5015354). Akhaltsikhe, Kodiana, *Picea* forest, soil, 1050 m, 06.VI.1916, V. Kozlovsky (TBI5015525). Aspindza, *Pinus* forest, soil, 1200 m, 22.VII.1968, Ts. Inashvili (TBI5015357). Borjomi, Bakuriani Range, *Picea* forest, soil, 1800 m, 07.VII.1967, Ts. Inashvili (TBI5011721). Borjomi, Bakuriani, Andeziti, forest edge, soil, 18.VII.1955, Ts. Inashvili (TBI5011714). Borjomi, Bakuriani, N slope, 08.V.1916, V. Kozlovsky (TBI5015523). Ibidem, *Rhododendron caucasicum* shrubs, soil, 01.X.1920, V. Kozlovsky (TBI5015534). Borjomi, Bakuriani, Sakochao lakes, mossy rocks, 2400 m, 06.X.1966, Ts. Inashvili (TBI5015353). Borjomi, Bakuriani, Tskhratskaro mt., 01.VII.1916, N. Voronikhin (TBI5015526). Ibidem, *Betula* forest, soil, 22.V.1916, V. Kozlovsky (TBI5015524). Ibidem, birch forest, birch trunk base, 01.VII.1916, N. Voronikhin (TBI5015529). Ibidem, on scree, 2600 m, 24.VII.1920, V. Kozlovsky (TBI5012256). Borjomi, Borjomula river, *Picea* forest, soil, 09.VII.1976, N. Voronikhin (TBI5015530). Borjomi, Dabadzveli, Chobiskhevi, soil, 1900 m, 09.IX.1985, Ts. Inashvili (TBI5016073). Borjomi, Likani - shrubland with mosses, 23.VII.1920, N. Voronikhin (TBI5015532). Borjomi, Likani, 21.VIII.1930, V. Pakhunova (TBI5011713).

Borjomi, Nedzviskhevi river, forest, stub, 840 m, 25.VII.1968, A. Dolukhanov (TBI5015358). Borjomi, *Quercus* forest, soil, 1912, P. Vinogradov-Nikitin (TBI5015517). SHIDA KARTLI: Akhagori, Churta river, *Juniperus pygmaea*, soil, 1300 m, 27.VIII.1983, Ts. Inashvili (TBI5011729). Gori, 17.VII.1967, Ts. Inashvili (TBI5016490). Gori, Boshuri, Tana river, 1350 m, 15.VII.1966, Ts. Inashvili (TBI5002260). Ibidem, 1400 m, 04.VI.1967, Ts. Inashvili (TBI5002261). Gori, Gori, Ateni river, *Picea* forest with *Rhododendron luteum*, mossy rocks, 1920, E. Kikodze (TBI5012260). Ibidem, *Picea-Populus* forest with *Corylus avellana*, among mosses, 1923, E. Kikodze (TBI5015536). Ibidem, *Quercus* forest, soil, 20.VIII.1923, E. Kikodze (TBI5012259). Gori, subalpine, soil, 2900-3000 m, 28.III.1916, V. Kozlovsky (TBI5015521). Gori, Zonkari, Tskhinvali river, *Picea-Abies* forest, soil, 2000 m, 26.VII.1984, Ts. Inashvili (TBI5016065). Java, Edisa, Ermani, Didi Liakhvi river sources, Ermanistskali river, soil, 2440 m, 22.VIII.1968, A. Dolukhanov (TBI5002264). Java, Edisa, *Picea-Abies* forest, log, 1000 m, 09.VIII.1981, Ts. Inashvili (TBI5011728). Ibidem, riverside, soil, 2000 m, 03.VIII.1973, Ts. Inashvili (TBI5011722). Java, Edisa-Ermani, 1900 m, 04.VIII.1973, Ts. Inashvili (TBI5000422). Java, Edisa-Ermani, 2000 m, 12.VII.1973, Ts. Inashvili (TBI5000424). Java, Edisa-Sgubiri, *Juniperus* shrub, soil, 1750 m, 04.VIII.1973, Ts. Inashvili (TBI5000421). Ibidem, shrub, soil, 1750 m, 03.VIII.1973, Ts. Inashvili (TBI5002266). Java, Kurta, Didi Lliakhvi mt., top, 28.X.1947, V. Pakhunova (TBI5015543). Java, Nimia, Morgo mt., *Pinus* forest, boulder and soil, 02.IX.1947, V. Pakhunova (TBI5015545). Java, Posheta, forest, soil-stones, 03.IX.1947, V. Pakhunova (TBI5015546). Java, riparian forest, mossy rocks, 28.VIII.1947, V. Pakhunova (TBI5015544). Java, Sgubiri, alpine zone, mossy rocks, 1900 m, 04.VIII.1973, Ts. Inashvili (TBI5000423). Kareli, Tkemlovani, 1200 m, 13.VII.1967, Ts. Inashvili (TBI5000420). Kaspi, Ertatsminda, 26.V.1967, Ts. Inashvili (TBI5003556). TBILISI: Tbilisi Botanical Garden Georgia, soil, 725 m, 25.VI.1965, N. Chelidze (TBI5008476). Tbilisi, Kus-tba [Turtle lake], funicular platform, 670 m, 04.III.1963, A. Kutateladze et al. (TBI5011521). Ibidem, 04.III.1962, A. Kutateladze et al. (TBI5015346). Vere river, 04.VIII.1918, G. Spagorov (TBI5012254).

***Cladonia rangiferina* (L.) F.H.Wigg**

ABKHAZIA: Gagra, Akvara, Ritsa lake, Gega river, Bzipi forest, mountain top, 1000 m, 16.X.1934, A. Dolukhanov (TBI5000473). Ibidem, *Pinus-Betula* forest, birch tree, 1000 m, 16.X.1934, A. Dolukhanov (TBI5000475). Ibidem, *Picea* forest, soil, 1000 m, 29.VII.1912, G. Voronov (TBI5000468). Ibidem, Pshegishkhva mt., 1000 m, 15.X.1934, M. Sakhokia (TBI5000474). Gagra, Adzapshi river, *Abies-Fagus* forest, soil, 2300 m, 19.X.1934, M. Sakhokia (TBI5011730). Gagra, Iupshara river, at Ritsa lake, mosses, 1300 m, 01.X.1934, M. Sakhokia (TBI5000446). KAKHETI: Akhmeta, Gometsrts Alazani river, *Pinus* forest, soil, 17.V.1958, K. Kimeridze (TBI5000479). KVEMO KARTLI: Tetritskaro, Khrami, *Picea-Pinus* forest, soil, 11.VIII.1966, Ts. Inashvili (TBI5000482). MTSKHETA-MTIANETI: Dusheti, Anatori pass, soil, 2600 m, 13.VIII.1959, Ts. Inashvili (TBI5002697). Dusheti, Guro, Akiekhi river, soil, 2600 m, 14.VIII.1959, Ts. Inashvili (TBI5016108). Kazbegi, Devdoraki river, *Abies-Fagus* forest, soil, 2500 m, 20.VIII.1957, K. Kimeridze (TBI5011752). Kazbegi, Stepantsminda, Devdoraki, 07.IX.1957, K. Kimeridze (TBI5011753). Kazbegi, Stepantsminda, Devdoraki, 2000 m, 14.VII.1971, Ts. Inashvili (TBI5000484). Ibidem, forest edge, soil, 1900 m, 14.VII.1971, Ts. Inashvili (TBI5000483). Ibidem, forest, soil, 2600 m, 01.IX.1960, K. Kimeridze (TBI5000481). RA-CHA-LECHKHUMI - KVEMO SVANETI: Lentekhi, Moashi, Jvari Pass, *Picea-Fagus* forest, rotten timber, 2500 m, 26.VII.1963, Ts. Inashvili (TBI5002683). Oni, Glola, *Betula* forest, stub, 1800 m, 1963, Ts. Inashvili (TBI5002380). Oni, Gurshevi, forest, soil, 1650 m, 01.IX.1950, V. Pakhunova (TBI5011733). SAMEGRELO-ZEMO SVANETI: Abasha, Vedi, Khaishura river, boulders, 1600 m, 17.VIII.1976, Ts. Inashvili (TBI5002684). Mestia, Lekhziri glacier, stub, 2000 m, 1963, Ts. Inashvili (TBI5016057). Mestia, Becho Pass, *Fagus* forest, soil, 2200 m, VIII.1976, Ts. Inashvili (TBI5011763). Mestia, Becho, Dolra river sources, soil, 2000 m, 17.VIII.1976, Ts. Inashvili (TBI5011488). Mestia, Chuberi, Nenskra river, 1050 m, 20.VII.1976, Ts. Inashvili (TBI5002233). Mestia, Chuberi, Tita, Nenskra river, soil, 1000 m, 22.VII.1976, Ts. Inashvili (TBI5000486). Mestia, Chuberi, Sgurishi, Nenskra river, forest, soil, 800 m, 22.VII.1977, Ts. Inashvili (TBI5000488). Mes-

tia, Chuberi, Tita, Nenskra river, *Fagus-Picea* forest, stub, 1000 m, 22.VII.1976, Ts. Inashvili (TBI5000489, TBI5002231). Mestia, Dolra river, Mazeri mt., 2000 m, 25.VII.1976, Ts. Inashvili (TBI5000487). Mestia, Mazeri, Dolra river, mossy rocks, 2000 m, 20.VII.1976, M. Sokhadze (TBI5000485). Mestia, Mazeri, Dolra river, soil, 1850 m, VIII.1976, Ts. Inashvili (TBI5000490). Mestia, Nakra river sources, *Betula* forest edge, soil, 1650 m, 03.VIII.1976, Ts. Inashvili (TBI5011736). Mestia, Ushguli, Lekhziri glacier, 2000 m, 20.VIII.1963, Ts. Inashvili (TBI5011761). SAMTSKHE-JAVAKHETI: 06.VIII.1938 Sh. Nakhutsrishvili (TBI5011732). Borjomi, Bakuriani, Mitarbi, *Picea-Abies* forest, soil, 24.VII.1920, V. Pakhunova (TBI5000471). Borjomi, Bakuriani, mossy rocks, 20.IX.1920, N. Voronikhin (TBI5000472). Ibidem, Sakochao, *Rhododendron caucasicum* shrubs, soil, 2500 m, 19.V.1913, B. Kozlovsky (TBI5000469). Ibidem, slope hill, 1700 m, 17.VIII.1967, Ts. Inashvili (TBI5011735). Ibidem, Tshratskaro, *Picea-Alnus* forest, rotten tree, 09.VII.1937, V. Pakhunova (TBI5000477). Borjomi, Bakuriani, Tskhratskaro mt., 03.VIII.1944, D. Sosnovsky (TBI5000478). Ibidem, soil, 01.VII.1916, I. Lepchenko (TBI5000470).

***Cladonia rangiformis* Hoffm.**

ABKHAZIA: Gagra, Lidzava, Bichvinta-Miusera Strict Nature Reserve, oak-hornbeam forest, soil, 100 m, 11.VI.1980, A. Dolukhanov (TBI5011662). Ibidem, *Quercus-Carpinus betulus* forest, stub, 100 m, 26.VI.1980, Ts. Inashvili (TBI5011663). Gagra, Lidzava, Bichvinta-Miusera Strict Nature Reserve, *Quercus-Carpinus* forest, oak trunk, 100 m, 06.VI.1979, A. Dolukhanov (TBI). ADJARA: near Batumi, c. 1800, Herb. C. Steven (H). GURIA: Ozurgeti, *Picea* forest, stub, 05.VII.1959, I. Dylevskaya (TBI5011739). IM-ERETI: Zestaponi, Adjameti, *Fagus-Carpinus* forest, soil, 13.X.1962, I. Dylevskaya (TBI5015584). KAKHETI: Dedoplistskaro, Darikala, Vashlovani Nature Reserve, 350 m, 20.IV.1962, N. Chelidze (TBI5014046). Dedoplistskaro, Eliar-Oughi, Vashlovani Nature Reserve, 350 m, 05.XII.1968, N. Chelidze (TBI5013573). Dedoplistskaro, Datvis-khevi, Vashlovani Nature Reserve, 350 m, 1964 (TBI5013571). Dedoplistskaro, Shiraki, Datvis-khevi, Vashlovani Nature Reserve, 350 m, 10.XI.1968, N. Chelidze (TBI5014052). Dedoplistskaro, Shiraki, forest, 08.XII.1952,

M. Sakhokia (TBI5015583). Dedoplistskaro, Shiraki, Vashlovani Nature Reserve, *Pistacia* open woodland, 350 m, 06.X.2010, N. Lachashvili (TBI). Ibidem, 21.XI.1964, N. Chelidze (TBI5013549). Ibidem, *Pistacia* open woodland 350 m, 19.IV.1988, Ts. Inashvili (TBI5013556). Ibidem, *Pistacia* open woodland 350 m, 14.X.1988, Ts. Inashvili (TBI5008491). Ibidem, *Pistacia* open woodland 350 m, 03.X.1989, Ts. Inashvili (TBI5002931). Ibidem, *Pistacia* open woodland 350 m, 14.IV.1988, Ts. Inashvili (TBI5011671). Ibidem, *Pistacia* open woodland soil, 350 m, 05.VIII.1989, Ts. Inashvili (TBI5002932). Ibidem, *Pistacia* open woodland 350 m, 14.VIII.1988, Ts. Inashvili (TBI5008477). Ibidem, *Pistacia* open woodland 350 m, 01.XII.1962, Z. Kebabdz (TBI5011740). Ibidem, *Pistacia* open woodland 350 m, 05.XI.1970, M. Sokhadze (TBI5015586). Sagarejo, soil, 17.VIII.1947, V. Pakhunova (TBI5011737). Lagodekhi, Lagodekhi reserve, *Fagus* forest, mossy rocks, 2000 m, 20.XI.1964, N. Chelidze (TBI5013171). Ibidem, Shromis-khevi river, 1284 m, 15.V.1979, K. Tigishvili (TBI5016488). Sagarejo, soil, 20.I.1947, M. Gurgendze (TBI5015579). Sagarejo, Udabno, Soviet farm, 760 m, 01.XII.1947, M. Gurgendze (TBI5015580). KVEMO KARTLI: Tetrtskaro, Krami reservoir, 1900 m, 11.VIII.1966, Ts. Inashvili (TBI5011651). Tsalka, Livadi, 30.VIII.1948, G. Zamtardze (TBI5015581). MTSKHETA-MTI-ANETI: Mtskheta, Azmaziskhevi river, shrub, 13.II.1966, Ts. Inashvili (TBI5015494). Dusheti, Shatili, 1250 m, VII.1985, Ts. Inashvili (TBI5016489). Kazbegi, Kuro mt., base, beech forest, mossy rocks, 1900 m, 20.VII.1971, Ts. Inashvili (TBI5016056). Mtskheta, Armariskhevi river, 2000 m, 30.VII.1963, N. Chelidze (TBI5011644). Mtskheta, Armaziskhevi river, soil, 22.VI.1963, Ts. Inashvili (TBI5008489). Ts. Mtskheta, Saguramo Range, stub, 12.VII.1969, Ts. Inashvili (TBI5016099). Mtskheta, Saguramo, 18.VII.1959, Ts. Inashvili (TBI5016090). RACHA-LECHKHUMI - KVEMO SVANETI: Oni, Glola, *Betula* forest, soil, 1500 m, 04.IV.1964, N. Chelidze (TBI5014049). Oni, Shovi, soil, 28.XI.1961, K. Kancheveli (TBI5002176). SAMTSKHE-JAVAKHETI: Borjomi, Kvabiskhevi, soil, 2600 m, 09.VIII.1986, Ts. Inashvili (TBI5002178). SHIDA KARTLI: Gori, forest, stub, 28.III.1916, V. Kozlovsky (TBI5015571).



Gori, Gori, 19.X.1922, E. Kikadze & B. Shishkin (TBI5015577). TBILISI: *Buxus-Carpinus* community, stub, 13.XII.1915, N. Voronikhin (TBI5015568). Dabakhanka, Legrtakhevi (Tsavkiskishevi) river, 1915, A. Danilov (TBI5015576). Tbilisi, funicular, *Carpinus orientalis* shrub, soil, 750 m, 20.IX.1964, N. Chelidze (TBI5014050). Tbilisi Botanical Garden Georgia, birch forest, soil, 725 m, 27.IV.1910, G. Voronov (TBI110). Ibidem, stones, 725 m, 1920, G. Voronov (TBI111). Ibidem, subalpine meadows, 725 m, 25.VI.1965, N. Chelidze (TBI5008476). Ibidem, SW slope, 725 m, 12.V.1910, D. Sosnovsky (TBI). Tbilisi, Tsavkiskishevi river, NW slope, boulders, 24.IV.1965, N. Chelidze (TBI5011741). Tbilisi, Kus-tba [Turtle lake], pine plantation, 670 m, 07.IX.1962, N. Chelidze (TBI5013539). Tbilisi, Kus-tba [Turtle lake], Mama Daviti mt., 800 m, 23.V.1952, G. Zamtaradze (TBI5015582). Ibidem, 25.VII.1952, G. Zamtaradze (TBI5002211). Tbilisi, Kus-tba [Turtle lake], 670 m, 04.III.1963, A. Kutazeladze et al. (H, TBI5011642). Teleti Range, 24.IX.1962, N. Chelidze (TBI5014047). Vashlijvriskhevi, Lisi lake, forest, 980 m, 21.VI.2010, N. Lachashvili (TBI). Ibidem, Vashlijvriskhevi river, N slope, *Quercus-Castanea* forest, soil, 980 m, 18.VI.2010, N. Lachashvili (TBI).

### *Cladonia rei* Schaer.

ABKHAZIA: Gagra, Akvara, Ritsa lake, Iupshara river, stones, 1000 m, 01.X.1934, M. Sakhokia (TBI5015510). ADJARA: Kobuleti, Tsikhisdziri, 28.VII.1927, V. Pakhunova (TBI5011495). IMERETI: Kharagauli, Partskhnali, *Juniperus* shrub, soil, 18.X.1937, V. Pakhunova (TBI5015542). Baghdati, Sairme, rotten tree, 2000 m, 22.VII.1969, Ts. Inashvili (TBI5011702). Tkibuli, Tkibuli, soil, 15.VII.1965, Ts. Inashvili (TBI5003106). Tkibuli, Tsutskhvati, 16.VIII.1970, M. Sokhadze (TBI5002274). KAKHETI: Dichdeli, 15.VIII.1950, A. Ghviniashvili (TBI5015386). Dedoplistskaro, Shiraki, Vashlovani Nature Reserve, 350 m, 14.VIII.1988, Ts. Inashvili (TBI5008477). Sagarejo, Antokiskhevi river, mossy soil, 1150 m, 01.VIII.1962, N. Chelidze (TBI5015360). Sagarejo, Antokiskhevi, Pinus bark, 01.III.1962, N. Chelidze (TBI5013516). Sagarejo, Arkhatani, 01.I.1948, M. Gurgenidze (TBI5002209). Sagarejo, Lagodekhi, Lagodekhi reserve, Shromiskhevi river, 550 m, 15.V.1979, Ts. Inashvili (TBI5011601). KVEMO KARTLI: Tetrtskaro, Alekseev-

ka, Lenkezan, *Fagus* log, 02.VII.1938, A. Shlapina (TBI5011627). Tsalka, Neonkharabakhi, 09.VIII.1969, Ts. Inashvili & N. Chelidze (TBI5011652). MTSKHETA-MTI-ANETI: Dusheti, Barisakho, scree, 1450 m, 23.VIII.1959, Ts. Inashvili (H, TBI5002227). Dusheti, Guli, *Fagus* forest, stones, 09.VIII.1959, Ts. Inashvili (H, TBI5003405). Dusheti, Guro, 2400 m, 15.VIII.1959, K. Kimmeridze (TBI5011700). Dusheti, Guro, forest, 15.VIII.1959, Ts. Inashvili (TBI5011700). Dusheti, Roshka, 2500 m, 28.VIII.1961, Ts. Inashvili (TBI5015387). Dusheti, Kistani, road Zhinvali-Barisakho-Shatili, Arguni, bank river, 42°35'20"N, 45°05'46"E, vertical slates, 2000 m, 20.VIII.2015, T. Ahti, A.R. Burgaz, I. Kupradze & A. Jorjadze (MACB109406). Dusheti, Pshav-Khevsureti Range, Maghrani, road Zhinvali-Barisakho-Shatili, Aragvi, river bank, 42°25'55"N, 44°56'42"E, close to *Fagus orientalis* forest, slates, 1200 m, 20.VIII.2015, T. Ahti, A.R. Burgaz, I. Kupradze & A. Jorjadze (MACB109407). RACHA-LECHKHUMI - KVEMO SVANETI: Ambrolauri, Kajiani, Lukhuni river, *Fagus-Abies* forest, soil, 2000 m, 14.VII.1982, Ts. Inashvili (TBI5002677). Ibidem, *Rhododendron caucasicum* shrub, soil, 2000 m, 14.VII.1982, Ts. Inashvili (TBI5001651, TBI5001650). Ambrolauri, Shaori reservoir, forest, stub, 21.VII.1965, Ts. Inashvili (TBI5002689). Lentekhi, Kheledula river, *Picea-Pinus* forest, soil, 1600 m, 12.VII.1979, Ts. Inashvili (TBI5003104). Lentekhi, Kheledula river, soil, 1500 m, 12.VII.1979, Ts. Inashvili (TBI5002229). Lentekhi, Koruldashi, *Picea-Castanea* forest, chestnut trunk lower part, 01.VIII.1963, Ts. Inashvili (TBI5011699). Oni, Glola, *Pinus-Betula* forest, mosses, 1500 m, 19.VIII.1969, Ts. Inashvili (TBI5002690). Oni, Zumpa, spruce forest, soil, 29.VIII.1952, V. Pakhunova (H, TBI5002288). Tsageri, Utskheri, Lajanuri, *Picea* forest, stub, 1980 m, 08.VIII.1961, Ts. Inashvili (TBI5002228). SAMEGRELO-ZEMO SVANETI: Martvili, Okhachkue-Kvira massif, Migaria mt., 1961, M. Sokhadze (TBI5013557). Mestia, 1600 m, 02.VII.1975, Ts. Inashvili (TBI5011683). Mestia, Adishi, soil, 10.VIII.1963, Ts. Inashvili (TBI5002364). Mestia, Adishi, stub, 2000 m, 11.VIII.1963, Ts. Inashvili (TBI5011698). Ibidem, spruce-fir forest, stub, 1980 m, 10.VIII.1963, Ts. Inashvili (TBI5011697). Mestia, Becho Pass, *Fagus-Carpinus betulus* forest, soil, 2200 m, 31.VII.1976, Ts. Inashvili (H, TBI5011703).



Mestia, Becho, Tvebishi, Lachkhviti, *Picea-Abies* forest, stub, 1600 m, 23.VII.1963, Ts. Inashvili (TBI5016049). Mestia, Chuberi, Nenskra river, *Picea-Abies* forest, soil, 850 m, 20.VII.1976, Ts. Inashvili (TBI5008487). Mestia, Chuberi, Nenskra river, soil, 2850 m, 30.VII.1976, Ts. Inashvili (TBI5002676). Mestia, Chuberi, Sgurishi, Nenskra river, 800 m, 20.VII.1976, Ts. Inashvili (H, TBI5001652). Mestia, Chuberi, Tita, Nenskra river, forest edge, mosses, 1000 m, 22.VII.1966, Ts. Inashvili (TBI5002675). Ibidem, *Picea-Abies* forest, soil, 1000 m, 22.VII.1976, Ts. Inashvili (TBI5001653). Mestia, Lenjeri, *Picea-Abies* forest, soil, 1500 m, 02.VII.1975, Ts. Inashvili (TBI5011682). Mestia, Mestia, Mestia-Mulakhi, soil, 1600 m, 01.VII.1975, Ts. Inashvili (TBI5011766). Mestia, Mulakhi, Khazgari, subalpine zone, mosses, 14.VIII.1963, Ts. Inashvili (TBI5016048). Mestia, Mulakhi, spruce-fir forest, stub, 2000 m, 04.VIII.1963, Ts. Inashvili (TBI5011541). Mestia, *Picea-Fagus* forest, rotten stub, 14.VIII.1963, Ts. Inashvili (TBI5002358). Mestia, Ushguli, Ushguli-Kala, 1800 m, 07.VIII.1963, Ts. Inashvili (TBI5015329). SHIDA KARTLI: Akhalgori, Largvisi, Ksani river, *Fagus-Carpinus* forest, calcareous soil, 1150 m, 25.VI.1983, Ts. Inashvili (H, TBI5002692). Kareli, Tkemlovani, Dzama river, alpine zone, stone, 2300 m, 14.VII.1967, Ts. Inashvili (TBI5011701).

***Cladonia squamosa* (Scop.) Hoffm.**

SAMEGRELO-ZEMO SVANETI: Martvili, Okhachkue-Kvira massif, Migaria mt., 1961, M. Sokhadze (TBI5013557).

***Cladonia stellaris* (Opiz) Pouz. & Vězda**

RACHA-LECHKUMI - KVEMO SVANETI: Ambrolauri, Tkhmori, 1873, N. K. Sredinsky in Savicz: Lichenotheca Rossica no. 118b (H, LE).

***Cladonia subulata* (L.) F.H. Wigg.**

IMERETI: Baghdati, Sairme, *Rhododendron caucasicum* and *Vaccinium myrtillus* thicket, 930 m, 24.IX.1970, Ts. Inashvili (TBI5015390). Tkibuli, Mukhuri, 26.VIII.1948, A. Kutateladze (TBI5015338). KAKHETI: Sagarejo, *Fagus* forest, log, 1800 m, 04.VIII.1948 (TBI5011573). Sagarejo, Gombori, *Fagus* forest, log, 1250 m, 04.VIII.1948, V. Pakhunova (TBI5002292). KVEMO KARTLI: Tetrtskaro, Alekseevka, tragacanth community, soil, 31.VII.1966, Ts. Inashvili (TBI5000495). Tetrtskaro, Manglisi,

Namtvriana, 1966, Ts. Inashvili (TBI5015388). MTSKHETA-MTIANETI: Dusheti, Simagrela, mossy soil, 2200 m, 19.VII.1960, Ts. Inashvili (TBI5002273). RACHA-LECHKUMI - KVEMO SVANETI, Zumpa, 29.VIII.1952, V. Pakhunova (TBI5002288). Ambrolauri, Kajiani, Lukhuni river, *Picea* forest, soil, 850 m, 14.VII.1982, Ts. Inashvili (TBI5002238). Ambrolauri, Shaori reservoir, 1175 m, 21.VII.1965, Ts. Inashvili (H, TBI5002662). Ambrolauri, Uravi, mossy rocks, 20.VIII.1951, V. Pakhunova (TBI5002245). Ambrolauri, Uravi, pasture field, soil, 20.VIII.1951, V. Pakhunova (TBI). Lentekhi, Kheledula river, *Picea-Pinus* forest, soil, 1600 m, 12.VII.1979, Ts. Inashvili (TBI5003104). Oni, Ghebi, 07.VI.1967, R. Gagnidze et al. (TBI5002318). Oni, Ghebi, soil, 06.VII.1967, R. Gagnidze et al. (TBI5011595). SAMEGRELO-ZEMO SVANETI: Mestia, Mazeri, Dolra river, 1900 m, 25.VII.1976, Ts. Inashvili (TBI5011504). SAMTSKHE-JAVAKHETI: Borjomi, Bakuriani Range, 1750 m, 17.VIII.1967, Ts. Inashvili (TBI5011672). Borjomi, Bakuriani, Kokhta mt., forest, soil, 1700 m, 15.VIII.1970, Ts. Inashvili (TBI5011562). Borjomi, Bakuriani, *Rhododendron caucasicum* shrubs, 08.VI.1928, V. Kozlovsky (TBI5002248). Borjomi, *Pinus* forest, soil, 1800 m, 09.IX.1985, Ts. Inashvili (TBI5002230). SHIDA KARTLI: Java, 1600 m, 10.VII.1981, Ts. Inashvili (TBI5002279). Java, Kurta, Liakhvi river, at mountain top, soil, 2750 m, 28.VIII.1947, V. Pakhunova (TBI5002241). Java, Sgubiri, 04.VIII.1973, Ts. Inashvili (TBI5015391).

***Cladonia sulphurina* (Michx.) Fr.**

ADJARA: Khulo, Danisparauli, Goderzi Pass, Arsiani Range, spruce-fir forest, 2300 m, 24.VII.1962, K. Kimeridze (TBI5000431). Khulo, Danisparauli, Goderzi Pass, Arsiani Range, spruce-fir forest, stub, 2300 m, 24.VII.1962, K. Kimeridze (TBI5000432). RACHA-LECHKUMI - KVEMO SVANETI: Lentekhi, Devashi-Lakhashura river sources, Labrakhi rocks, *Castanea-Fagus* forest, mossy rocks, 2400 m, 03.VIII.1979, Ts. Inashvili (TBI5016020). Lentekhi, Goldashi mt., *Pinus-Picea* forest, stub, 2500 m, 24.VIII.1973, Ts. Inashvili (TBI5000437). Lentekhi, Labrakhi, Tskhenistskali river, scree, 2030 m, 06.VIII.1979, D. Mtskhvetadze (TBI5000436). Lentekhi, Tskhenistskali river, SW slope, 2300 m, 27.VII.1963, G. Zamtaradze (TBI5002280). Oni, Gur-

shevi, *Picea-Betula* forest, mosses, 1650 m, 01.IX.1950, V. Pakhunova (TBI5000429). SAMEGRELO-ZEMO SVANETI: Mestia, Becho, Dolra river sources, forest, wood, 2000 m, 31.VII.1976, Ts. Inashvili (TBI5002680). Mestia, Dolra river, Mazeri mt., soil, 1900 m, 25.VII.1976, Ts. Inashvili (TBI5000435). SAMTSKHE-JAVAKHETI: Borjomi, Bakuriani, forest, soil, 19.V.1913, V. Kozlovsky (H, TBI5000427). Ibidem, Kokhta mt., *Buxus* shrubs, 1700 m, 26.VIII.1925, V. Pakhunova (TBI5011494). Ibidem, Sanislo mt., *Picea-Pinus* forest, stub, 2500 m, 22.VII.1968, V. Gulmagarashvili (TBI5011561). Ibidem, Tskhratskaro, chestnut forest, 1600 m, 06.IX.1966 (TBI5011560). Ibidem, Tskhratskaromt., *Betula* forest, log, 02.VII.1916, N. Voronikhin (TBI5000428). SHIDA KARTLI: Java, Edisa, Ermani, Keli lake, 2600 m, 30.VII.1973, Ts. Inashvili (TBI5000434).

***Cladonia symphyarpa* (Flörke) Fr.**

KVEMO KARTLI: Tetrtskaro, Manglisi, 10.VIII.2014, Ts. Inashvili (TBI). Tetrtskaro, Manglisi, *Picea-Abies* forest, soil, 25.V.2003,

A. Jorjadze (TBI5002930). MTSKHETA-MTI-ANETI: Dusheti, Pshav-Khevsureti Range, Kistani, road Zhinvali-Barisakho-Shatili, Arguni river, 42°33'40"N, 45°05'13"E, *Salix caprea*, *Betula litwinowii*, slates, 2050 m, 20.VIII.2015, T. Ahti, A.R. Burgaz, I. Kupradze & A. Jorjadze (H, MACB109401). Dusheti, Pshav-Khevsureti Range, Kistani, road Zhinvali-Barisakho-Shatili, Arguni river, 42°33'40"N, 45°05'13"E, *Salix caprea*, *Betula litwinowii*, slates, 2050 m, 20.VIII.2015, T. Ahti, A.R. Burgaz, I. Kupradze & A. Jorjadze (MACB109404). IMERETI: Sachkhere, 24.VII.1965, Ts. Inashvili (TBI5016055). SAMEGRELO-ZEMO SVANETI: Senaki, mossy rocks, moraines, 1950 m, 14.XI.2014, Ts. Inashvili (TBI).

***Cladonia uncialis* (L.) F.H. Wigg.**

ADJARA: Shuakhevi, Mareti mt. [Iaila Chirukhi], 24.VI.1910, N. Popov (TBI5015596). SAMEGRELO-ZEMO SVANETI: Mestia, Zemo Svaneti, Lekhziri glacier, soil, 2000 m, 20.VIII.1963, Ts. Inashvili (TBI5016057).